STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: November 15, 2021

FROM: Andrew O'Sullivan
Wetlands Program Manager

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT Dredge & Fill Application
Sandwich, 43487

TO Karl Benedict, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Bridge Maintenance for the subject major impact project. This project is classified as major Env-Wt 903.01(g)- repair and rehabilitation of an existing legal Tier 3 structure. The project is located along NH Route 113A in the Town of Sandwich, NH. The proposed work consists of the installation of a reinforced concrete invert in the bottom of the existing corrugated metal culvert, permanent impacts are for the installation of rip rap at the SW corner of the outlet, installation of two fish weirs at the outlet (water level control structures), and installation of a ramp to facilitate aquatic organism passage.

This project was reviewed at the Natural Resource Agency Coordination Meeting on July 21, 2021. A copy of the minutes has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm.

NHDOT anticipates and request that this project be reviewed and permitted by the Army Corp of Engineers through the State Programmatic General Permit process. A copy of the application has been sent to the Army Corp of Engineers.

Mitigation is required as the proposed work will impact 7 SF. An in-lieu fee payment of $30.27 will be made to the NHDES ARM fund.

The lead people to contact for this project are Tim Boodey, Bureau of Bridge Maintenance (271-3668 or Timothy.Boodey@dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-3226 or Andrew.O'Sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher # 662361) in the amount of $832.40.

If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

AMO:amo
cc:
BOE Original
Town of Sandwich (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Beth Alafat & Jeanie Brochi, US Environmental Protection Agency (via electronic notification)
Michael Hicks & Rick Kristoff, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

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STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: NHDOT **TOWN NAME:** Sandwich

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the Waiver Request Form.

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2))

Please use the Wetland Permit Planning Tool (WPPT), the Natural Heritage Bureau (NHB) DataCheck Tool, the Aquatic Restoration Mapper, or other sources to assist in identifying key features such as: priority resource areas (PRAs), protected species or habitats, coastal areas, designated rivers, or designated prime wetlands.

Has the required planning been completed?	☒ Yes ☐ No
Does the property contain a PRA? If yes, provide the following information:	☒ Yes ☐ No
• Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	☐ Yes ☒ No
• Protected species or habitat? o If yes, species or habitat name(s): o NHB Project ID #: NHB-21-1987	☐ Yes ☒ No
• Bog?	☐ Yes ☒ No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	☒ Yes ☐ No
• Designated prime wetland or duly-established 100-foot buffer?	☐ Yes ☒ No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	☐ Yes ☒ No
Is the property within a Designated River corridor? If yes, provide the following information: • Name of Local River Management Advisory Committee (LAC): • A copy of the application was sent to the LAC on Month: Day: Year:	☐ Yes ☒ No

For dredging projects, is the subject property contaminated? • If yes, list contaminant:	☐ Yes ☒ No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	☐ Yes ☒ No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): 1,542 acres	

SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))

Provide a **brief** description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.

The proposed project will install a concrete invert inside an existing corrugated metal pipe, install two fish weirs at the downstream side of the structure, replace rip rap in its exisitng footprint at the NW corner of the culvert, and install rip rap at the SW corner of the culvert.

The purpose of the project is to repair the deteriorated condition of the bridge. The bridge is currently on the NHDOT Red List and this project will remove it from the Red List. The fish weir installation will elimiate an existing perched condition at the outlet. The replacement of rip rap at the NW corner (inlet) and the SW corner (outlet) will protect the existing infrastructure.

Permanent impacts are for the installation of rip rap at the SW corner of the outlet, installation of two fish weirs at the outlet (water level control structures), and installation of a ramp to facilitate aquatic organism passage. Total permanent impacts are 474 sq ft.

Temporary impacts are for the installation of rip rap at the NW corner, for the installation of sandbag cofferdams, clean waer bypass, and BMP's.

SECTION 3 - PROJECT LOCATION

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS: NH Route 113A over Mill Brook	
TOWN/CITY: Sandwich	
TAX MAP/BLOCK/LOT/UNIT: NHDOT ROW	
US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME: Mill Brook ☐ N/A	
(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places):	43.88676° North -71.36967° West

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a)) If the applicant is a trust or a company, then complete with the trust or company information.		
NAME: NH Department of Transportation, Tim Boodey		
MAILING ADDRESS: 7 Hazen Drive;		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: timothy.m.boodey@dot.nh.gov		
FAX:	PHONE: 603-271-3667	
ELECTRONIC COMMUNICATION: By initialing here: TmB, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c)) ☒ N/A		
LAST NAME, FIRST NAME, M.I.:		
COMPANY NAME:		
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL ADDRESS:		
FAX:	PHONE:	
ELECTRONIC COMMUNICATION: By initialing here , I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b)) If the owner is a trust or a company, then complete with the trust or company information. ☑ Same as applicant		
NAME: NH Department of Transportation, Andrew O'Sullivan		
MAILING ADDRESS: 7 Hazen Drive; PO Box 483		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: andrew.o'sullivan@dot.nh.gov		
FAX: 271-7199	PHONE: 271-3226	
ELECTRONIC COMMUNICATION: By initialing here , I hereby authorize NHDES to communicate all matters relative to this application electronically.		

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):

Env-Wt 400: The wetlands were delineated by Matt Urban and Deidra Benjamin on 6/24/21. The delineation classified the wetland as riverine, lower perennial, unconsolidated bottom bedrock and rubble (R2UB1,2) and palustrine, scrub-shrub, broad-leaved deciduous seasonally flooded/saturated (PEM/PSS1E) in the project area. The project is classified as major based on the impacts and resources present.

Env-Wt 500: The project meets the requirements of public highway projects.

Env-Wt 600: N/A. no tidal wetlands in the project area.

Env-Wt 700: N/A, no prime wetlands within the project area.

Env-Wt 900: Tier 3 crossing Env-Wt 904.05. This bridge maintenance project includes repair to a Tier 3 crossing to extend the life of the bridge and remove it from the NHDOT Redlist. The project adheres to the criteria set forth in 904.09 (c): (1) The existing crossing does not have a history of causing or contributing to flooding that damages the crossing or other human infrastructure or protected species habitat; and (2) The propsoed stream crossing will; (a) meet the general criteria specified in Env-Wt 904.01; (b) maintain or enhance hydraulic capacity of the stream crossing; (c) maintian or enhance the capacity of the crossing to accommodate aquatic organism passage; (d) maintain or enhance the connectivity of the stream reaches upstream or downstream of the crossing and; (e) not cause or contribute to the increase in the frequency of flooding or overtopping of the banks upstream or downstream of the crossing.

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization and the Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet. For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the Avoidance and Minimization Checklist, the Avoidance and Minimization Narrative, or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation pre-application meeting must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: 10 Day: 21 Year: 2021

(☐ N/A - Mitigation is not required)

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: ☒ I confirm submittal.

(☐ N/A – Compensatory mitigation is not required)

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/rivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland			☐			☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland	7		☐	949		☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface Water	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River	467	54	☐	658	89	☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River			☐			☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		474	54		1607	89	

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

☐ **MINIMUM IMPACT FEE**: Flat fee of $400.

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of $400 (refer to RSA 482-A:3, 1(c) for restrictions).

☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:

Permanent and temporary (non-docking):	2081 SF	× $0.40 =	$ 832.4
Seasonal docking structure:	SF	× $2.00 =	$
Permanent docking structure:	SF	× $4.00 =	$
Projects proposing shoreline structures (including docks) add $400 =			$
Total =			$
The application fee for minor or major impact is the above calculated total or $400, whichever is greater =			$ 832.4

SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)

Indicate the project classification.

☐ Minimum Impact Project	☐ Minor Project	☒ Major Project

SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)

Initial each box below to certify:

Initials: TMB	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: TMB	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
Initials: TMB	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
Initials: TMB	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.

SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)

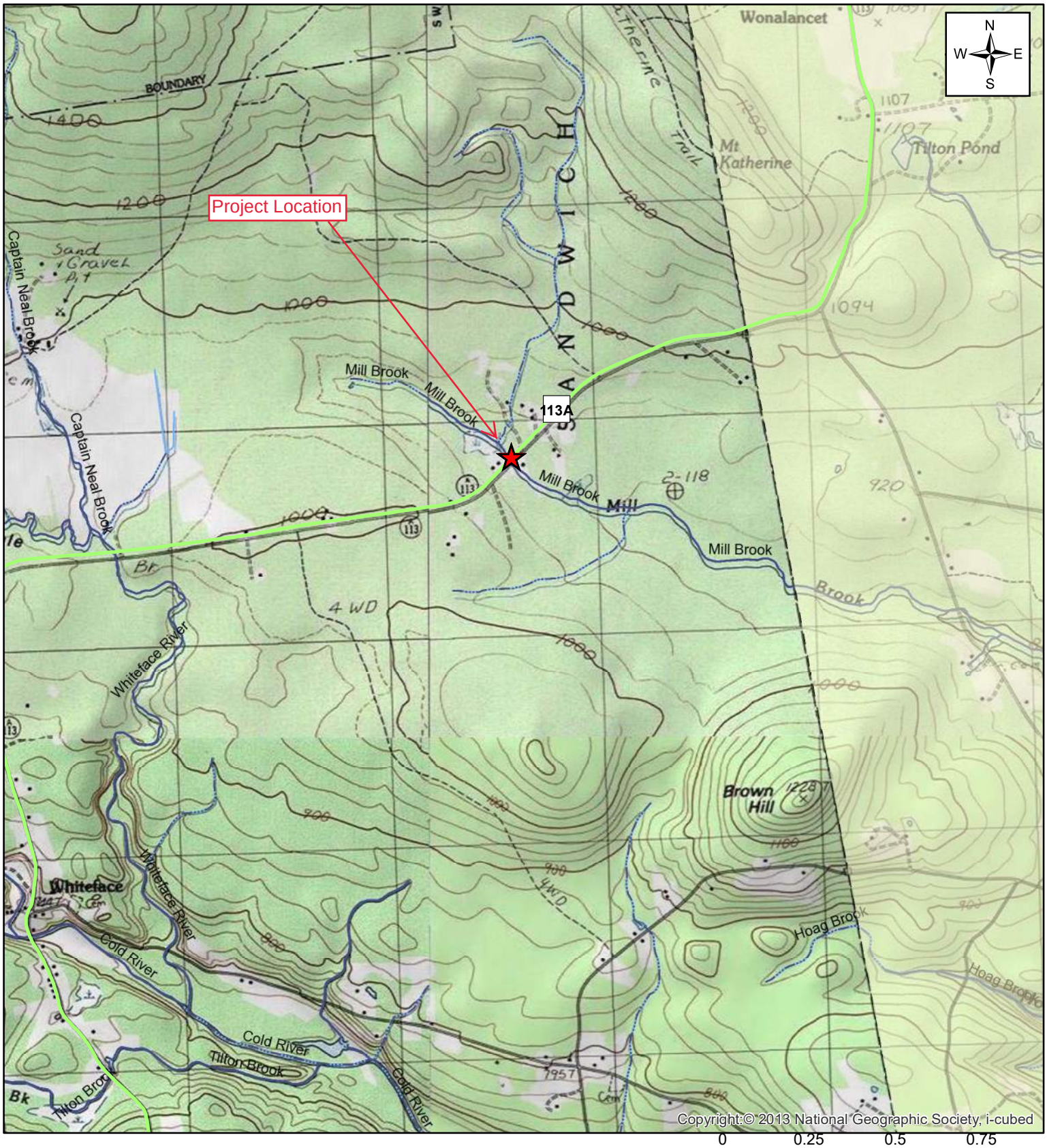
SIGNATURE (OWNER): [signature]	PRINT NAME LEGIBLY: Timothy M. Boodey	DATE: 11/5/2021
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY:	DATE:

SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))

As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

TOWN/CITY CLERK SIGNATURE: Exempt-State Agency per RSA 482-A:3,I(a)1	PRINT NAME LEGIBLY:
TOWN/CITY:	DATE:

Sandwich, 43487



Legend

- Project Location
- State Routes

Map depicting bridge 226/162 NH 113A over Mill Brook

Map created by: K. Ryan on 6/15/21

Source: S:\Environment\PROJECTS\SAndwich\43487

1:24,000

New Hampshire DOT Department of Transportation

STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION ATTACHMENT A: MINOR AND MAJOR PROJECTS

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: NH Department of Transportation **TOWN NAME:** Sandwich

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the Avoidance and Minimization Narrative or Checklist that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization.

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

THERE IS NO PRACTICABLE ALTERNATIVE THAT WOULD MEET THE PURPOSE OF THE PROJECT AND HAVE LESS OF AN ADVERSE IMPACT ON THE AREA AND ENVIRONMENTS UNDER THE DEPARTMENT'S JURISDICTION.

TO DO NOTHING WOULD SIGNIFICANTLY INCREASE THE RISK OF DEFORMATION OF THE EXISITNG PIPE, LEAD TO A RISK OF FAILURE, AND CREATE A SAFTEY CONCERN TO THE TRAVELLING PUBLIC. TO DO NOTHING WOULD NOT MEET THE PROJECT NEED TO REPAIR THE DETERIOARTING STRUCTURE AND REMOVE IT FROM THE RED BRIDGE LIST.

A FULL BRIDGE REPLACEMENT WITH A COMPLIANT SIZED STRUCTURE WOULD RESULT IN AN INCREASE OF IMPACTS TO WETLAND RESOURCES FOR REMOVAL OF THE EXISTING STRUCTURE AND REPLACEMENT WITH A NEW STRUCTURE.

THE PREFERRED ALTERNATIVE IS TO REPAIR THE EXISING INFRASTRUCTURE IN CONJUNCTION WITH THE INSTALLATION OF RIP RAP TO PREVENT FUTURE DAMAGE TO THE BRIDGE AND PROVIDE EROSION PROTECTION. THE INSTALLATION OF THE CONCRETE INVERT LINING WILL REPAIR DAMAGE ALONG THE BOTTOM OF THE PIPE WHILE ALLOWING THE REMAINDER OF THE PIPE TO REMAIN IN PLACE. THIS ALTERNATIVE AVOIDS AND MINIMIZES IMPACTS TO WETLAND RESOURCES TO THE MAXIMUM EXTENT PRACTICABLE WHILE MAINTAINING THE INTEGRITY AND SAFETY OF THE BRIDGE.

SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

N/A This project does not impact marshes.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

The existing structure maintains hydraulic connections between the upstream and downstream channel of Mill Brook The proposed project will not result in a change in hydraulic connection or flood storage capacity. The installation of a ramp and two fish weirs at the outlet will remove an existing perch and improve aquatic organism passage. There will be no change to the alignment of the structure. A clean water bypass pipe will be utilized in order to maintain water flows during the construction along with sandbag cofferdams to divert water away from the work areas and into the bypass pipe. The installation and replacement of rip rap will not alter the hydraulic connection of the riverine system and Mill Brook will continue to flow as it does today.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

The project has been designed in accordance with Env-Wt 400, 500, and 900. Impacts to wetland resources have been minimized to the extent practicable; jurisdictional impacts have been limited to improve the integrety of the structure, maintain hydraulics, improve aquatic organism passage, and access to the work areas.

A review of the Natural Heritage Bureau Database, NHB21-1987, did not identify rare species or exemplary natural communities near the project area.

An Official Species List was obtained from the USFWS using the Information for Planning and Consultation tool and the northern long-eard bat was identified on the Official Species List. The project was reviewed using the ESA Section 4(d) Rule and it was determined the proposed action is not likely to result in unauthorized take of the northern long-eared bat.

Mill Brook is a cold water stream. The proposed project will utilize sandbag cofferdams and a clean water bypass pipe during construction, in order to maintain water flow through the project area during construction.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

Traffic will continue to flow on NH Route 113A during construction, allowing public travel. In additon, the project area is rural and therefore it is not anticipated commerce will be impacted by the proposed project. Individual lane closures may be necessary temporarily, however there will be no permanent changes to roadway access.

The propsoed action does not require a US Coast Guard bridge permit or exemption. The proposed project was reviewed by the US Coast Guard and it was determined there is no sufficient actual support for concluding that the project location has current or historic navigation occurring on this water of the United States.

Impacts to recreation areas are not anticiapted as a result of this project. A review of the NH GraniteView database did not identify places of interest, recreation points, recreation areas, or trails within the project area.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

The scrub shrub wetlands that surround Mill Brook at the inlet and outlet of the bridge provide flood flow attenuation. The area is also mapped as FEMA floodplan Zone A. The proposed action is a maintenance project and does not have a significant adverse impact on floodplain values or create a significant risk to human life or property.

The proposed design matches existing flow conditions to the maximum extent practicable. As with the exisitng condition, the installation of the 6" concrete invert will pass the 100 year storm event.

Adding the water level control structures at the outlet of the structure will not affect the capacity of the structure during high flow events.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

The project area is partially within a scrub-shrub wetland. The project minimizes impacts to this wetland system by installing rip rap at the SW and NW corners of the bridge, in order to protect the structure and prevent future erosion of the wetland system. The project will result in 7 sq ft of permanent impacts of the scrub-shrub wetland at the SW corner of the bridge for placement of rip rap. The remaining scrub-shrub wetland impacts will be temporary and remain within the existing footprint.

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

A review of the DES OneStop database did not identify drinking water supply or groundwater aquifers in the project area. In additon, the proposed project is a bridge rehabilitation project in order to maintain existing infrastructure and will include minimum excavation. Best management practices will be utilized in order to limit erosion and sediment transport and prevent a discharge into Mill Brook. These measures will be maintained throughtout the construction of the project and will remain implemented until disturbed areas are permanently stabilized. Feuling and maintenance of equipment will take place in upland areas away from Mill Brook.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

Impacts to Mill Brook have been minimized and avoided where possible. Some disturbance to the existing bed will be necessary for the installation of material for building the ramp and fish weirs, and to the banks and channel for the installation of rip rap. Construction will be phased to minimize the area of the channel being impacted and Mill Brook will be diverted around the work area to allow for continuous flow through the project area. A temporary sedimention basin will be installed to capture any sediment laden water and allow for any sediments to settle before the water is released.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

The project has been designed to use minimum construction surface area over surface waters by limiting the amount of permanent impacts to the maxium amount practicable. The remaining impacts will be temporary impacts and limited to previously impacted areas and those needed for access, and the installation of cofferdams and a clean water bypass. The footprint of the existing bridge over surface waters will not change from the current footprint.

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

This project does not include any shoreline structures.

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

All work will be within the existing State right-of-way and will not impact the abutting landowners use of their property.

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.

The US Coast Guard determined there is no sufficient actual support for concluding that the proejct location has current or historic navigation occuring on Mill Brook.

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

This project does not propose shoreline structures.

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

The project does not propose shoreline structures.

PART II: FUNCTIONAL ASSESSMENT
REQUIREMENTS Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED: Per RSA 310A:79 - Exemption III, Matt Urban, NHDOT Operations Section Chief and Deidra Benjamin, NHDOT Environmental Coordinator/CWS, performed the wetland identification and delineation on 6/24/2021. The wetlland functional assessment for this project utilized the ACOE Highway Methology. The principal functions and values are floodflow alteration, fish and shellfish habitat, production export, sediment/shoreline stabilization, and wildlife habitat.
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: DEIDRA BENJAMIN
DATE OF ASSESSMENT: 8/24/21
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT: ☒
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable: ☐ Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: NHDOT **TOWN NAME:** Sandwich

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

No, this is a bridge maintenance project to repair and protect existing infrastructure.

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

No, this is a bridge maintenance project that includes the installation of a concrete invert, rip rap, and fish weirs.

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*

For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

**Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.*

This project does not propose permanent impacts greater than one acre.

The project will permanenty impact 7 sf of a PRA (scrub shrub wetland in a tier 3 floodpain) for the installation of rip rap at the SW corner of the bridge. This will provide erosion protection and will not alter the functions and values of any jurisdictional area, including the wetlands, stream, or a PRA.

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization?

Impacts cannot be completely avoided to jurisdicational areas as the purpose of the project is to maintain and protect an existing bridge which carries Mill Brook under the roadway. The footprint of the project is limited to areas with scour and those required to eliminate an existing perched condition. The project will improve the condition of an existing, deficient structure and therefore prevent future failures at the crossing.

There is no practicable alternative design or technique that would avoid impacts to jurisdictional areas, or their functions and values as described. A full bridge replacement with a compliant sized structure would result in a significant increase of impacts to jurisdictional wetland areas compared to the proposed maintenance project. To do nothing to the deteriorated structure leaves the structure vulnerable to failure.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

***Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A.*

Per RSA 310-A:79 – Exemption III, Matt Urban, NHDOT Operations Section Chief, and Deidra Benjamin, Certified Wetland Scientist of NHDOT, performed the wetland identification and delineation on June 24, 2021 according to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0, January 2012, US Army Corps of Engineers. A functions and values assessment was completed by Deidra Benjamin and Kerry Ryan, NHDOT, utilizing the ACOE Highway Methodology, on August 21, 2021. The principal functions and values of the adjacent palustrine scrub shrub wetlands are floodflow alteration, fish and shellfish habitat, production export, sediment/shoreline stabilization, and wildlife habitat.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: July 21, 2021
LOCATION OF CONFERENCE: Virtual meeting held via Zoom

ATTENDED BY:

NHDOT
Andrew O'Sullivan
Matt Urban
Mark Hemmerlein
Rebecca Martin
Arin Mills
Samantha Fifield
Maggie Baldwin
Cassandra Burns
Jason Abdulla
Meli Dube
Marc Laurin
Trent Zanes
Tonty King
Sarah Healey
Jennifer Reczek
Kerry Ryan
Tim Boodey
Joseph Jorgens
Jim MacMahon

EPA
Jeanie Brochi

NHDES
Lori Sommer
Karl Benedict
Cheryl Bondi

NHB
Jessica Bouchard

Federal Highway
Jaimie Sikora

The Nature Conservancy
Pete Steckler

LCHIP
Paula Bellemore

Consultants/ Public Participants
Christine Perron
Susan Francher
Tracey Boisvert

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

Lori Sommer, NHDES Wetlands Bureau, concurred that the project would require an alternative design and requested that the project narrative include details about the adjacent agricultural disturbance and other justifications for why a compliant structure is not feasible. L. Sommer also concurred that no mitigation would be necessary for the project as proposed. L. Sommer inquired about revegetating disturbed banks and C. Carucci responded that the Department will stabilize and seed areas disturbed as part of the project.

There were no further comments.
This project has not been previously discussed at a Natural Resource Agency Coordination Meeting.

Sandwich, #43487

Kerry Ryan, NHDOT Environmental Manager, gave an overview of the location of the proposed state funded bridge maintenance project, bridge 226/162, which carries NH Route 113A over Mill Brook in Sandwich. The existing structure is an elliptical corrugated metal pipe and was constructed in 1957. The surrounding area is rural/undeveloped. This is a Tier 3 crossing. Photos were shown of the project area from NH Route 113A, the structure and surrounding area at the inlet and the outlet of the pipe, existing rip rap at both the NW and SW corners of the bridge, and the existing perch.

Tim Boodey, NHDOT Bridge Maintenance Senior Engineer, described the proposed project which will include installation of a concrete invert inside the corrugated metal pipe, installation of fish weirs at the downstream side to eliminate an existing perched condition and allow for organism passage, and replacement of rip rap at the NW corner at the inlet side and SW corner at the outlet side to protect the existing infrastructure.

Preliminary wetland impact plans were shown identifying the locations of the existing rip rap, proposed rip rap replacement, proposed fish weir, sandbag cofferdam, work zone access path, and staging area. A sandbag cofferdam and a clean water bypass pipe through the structure will be installed for the concrete invert construction. The sandbag cofferdam and clean water bypass pipe will then be moved for the installation of the fish weir structure. The proposed rip rap at the SW corner was shown at a smaller scale. Tim further explained the installation of the rip rap at the SW corner will impact approximately 7 sf of delineated wetland above the ordinary high water, in addition to the existing rip rap footprint.

The longitudinal profile was shown and will be included in the permit application. The culvert outlet is slightly higher than the inlet, therefor retains water during most flows. Due to existing grades at the outlet, two fish weirs will be required to eliminate the existing perch during low flow and get the water level to the outlet elevation. Additional fill will also be included at the fish weir installation location at the outlet in order to eliminate the perched condition between the proposed invert and existing stream bed.

The proposed project is anticipated to begin November or December 2021 and will take approximately four months to complete. The construction sequence includes: installation of cofferdams, perimeter controls, and sedimentation basin; installation of a clean water bypass pipe; construction of concrete invert; relocate the sandbag cofferdam and clean water bypass pipe in order to construct the fish weirs; installation of fish weirs; installation of rip rap at the NW and SW

corners of the bridge. Perimeter controls will remain in place until any disturbed areas are revegetated.

Hydraulic analysis determined the existing culvert passes the 100-year storm event and will also post construction. The 100-year storm event water level will be shown on the longitudinal profile in the application. It was determined adding the water level control structure and fill at the outlet of the structure will not affect the capacity of the structure during high flow events. The structure is currently inlet controlled.

K. Ryan described the area as not being a designated river or protected shoreland area, and previous permits were not identified at the location. Portions of the project area were determined to be in a PRA. It was reiterated the project would only include approximately 7 sf of permanent impacts to the PRA, for the rip rap installation at the SW corner, while the remaining PRA impacts would remain within the existing rip rap footprint. The project is within the FEMA 100-year floodplain. Mill brook is identified as a cold water stream and NHFG data shows the presence of eastern brook trout and blacknose dace upstream and downstream. The area was not identified as EFH and no resources were identified on the NHB report. The IPaC Official Species List identified NLEB and the project was determined to have no effect on the species. The project was determined to have no potential to cause effects to cultural resources.

Lori Sommer, NHDES, asked how thick of a concrete invert is being proposed, where is the 7 sf impacts coming from, and what is the additional fill at the outlet for? T. Boodey answered the concrete invert will be 6", the 7 sf is for permanent impacts to the delineated wetland for rip rap installation in front of the existing wing wall, and the additional fill is to bring the water level up, not just due to the additional 6" from the invert installation, but because the existing pipe is perched. He explained although it is not visible in the longitudinal profile, there is a drop at the outlet so, to bring material up to the bottom of the pipe, to account for the 6" from the invert installation, and to allow for AOP, fill will be installed in that area, which will be a permanent impact.

L. Sommer said we would want to look at that in terms of any new rip rap being placed and potential mitigation and asked about the two fish weirs. T. Boodey answered there is enough of a grade difference that the project will be unable to just use one fish weir and although the second weir was not shown on the profile, it would be installed between the fish weir that is shown on the profile and the end of the structure.

Andy O'Sullivan asked if the additional material was to fix the perch. T. Boodey answered it was, to bring the water level up at the perch so water flows through the structure and additional material is being brought in to eliminate the perch and therefore allow other critters to get through the pipe.

A. O'Sullivan asked L. Sommer if we the project is proposing to fix the perch if just the footprint of the fish weir itself needs mitigation. L. Sommer responded she was trying to figure out if both are needed. T. Boodey said that in the past, any work that has been done to allow for both fish passage and AOP has been considered self-mitigating because we are mitigating an existing condition in addition to addressing the work that we are doing.

L. Sommer asked what is the current perch, the depth. T. Boodey answered approximately 1'.

Cheryl Bondi asked what is the proposed decrease of the perch. She explained the proposed decrease in perch is needed in order to determine if the project is self-mitigating and to determine what the improvement is to AOP. T. Boodey answered the result would be that water would flow continuously through the pipe, even during low flow conditions. C. Bondi asked if there would be no perch, no drop in water elevation at the outlet that a fish would have to jump up, from 1' drop to 0'. Boodey responded two fish weirs will be installed in order to not have a drop at the end of the

pipe and the 1' is from the bottom of the culvert, the existing steel, to the stream bed. Tim referenced the photo of the existing perch and explained the stream bed is lower than the existing invert and it is approximately 2-3" from the existing invert to the water level. C. Bondi asked if after the two fish weirs are installed, if the drop will be eliminated. T. Boodey responded it would. L. Sommer asked if we could do one or the other, either install fill or fish weirs to bring up the water level, but not both and she wants to see the information that necessitates the use of the outlet fill and the two fish weirs. T. Boodey answered the two weirs are to get the water through the culvert so there is no drop in water elevation at the culvert outlet.

Carol Henderson asked if the weirs are successful in elevating the water through the pipe are efficient they why use both. T. Boodey said because of the 1' depth, the fill would be installed so there wouldn't be as large of a gap between the stream bed and the bottom of the pipe and would also allow for additional AOP. L. Sommer said she is concerned because the outlet is already higher than the inlet. C. Henderson added that if just fish weirs, it will allow for fish passage because there will be flow through water however, the perch from the metal to the bottom may be high enough that other species, such as turtles, may not be able to access. M. Urban added that he understood that to be the case. C. Bondi asked for confirmation that the hole in front of the culvert will be filled in and then on top of that install two fish weirs. M. Urban said yes. T. Boodey added because of the difference in grade at the outlet, it is unlikely to be obtainable with just one weir. L. Sommer said weirs need to be shown and the design cross section need to be shown on the plans and the material that will be used. L. Sommer said the PRA would require mitigation and the fill at the outlet would require mitigation. C. Henderson said if can get the water level up in structure, turtles can swim and don't need to crawl along the bottom and asked what the structure in front of the pipe is and if it will be removed. T. Boodey answered that the structure was put in place due to beaver activity in the area and the device is in place so that future beavers would construct dams on the outside of the pipe and therefore more easily removed. M. Urban added we are trying to increase AOP for not just fish, but other amphibians and macroinvertebrates L. Sommer stated conditions will be included in the permit regarding fish weir construction and monitoring for up to five years. A. O' Sullivan asked for clarification if mitigation would be required for the PRA and the fill material to fix the perch, or just for the weirs themselves. L. Sommer responded just to fix the perch.

Mike Hicks, ACOE. had no comments

Pete Stickler, NC, had no comments

The proposed work and mitigation associated with Sandwich 43487 were discussed on October 19, 2021 with Lori Sommer and Karl Benedict of NHDES Wetlands Bureau, Tim Boodey of NHDOT Bridge Maintenance, and Andrew O'Sullivan, Matt Urban, and Kerry Ryan of NHDOT Bureau of Environment.

T. Boodey gave an overview of the project scope and impacts including grade control structures (two fish weirs and ramp for AOP). He said the grade control structures are to get rid of an existing perch and therefore, self-mitigating. He explained the existing perch, from the existing structure to the stream bed, is currently approximately 8" and the invert installation would add additional 6". K. Benedict asked what material would be used for the construction of the grade controls. T. Boodey stated the construction would start with rip-rap, in order to hold them in place, and natural stream bed material will be placed on top. M. Urban asked if the excavated material could be used for the construction of the control grade structures. T. Boodey said yes but additional material will still likely be needed. K. Benedict said the gradation should be included in the construction sequence.

A. O'Sullivan asked if there is scour at the outlet. T. Boodey responded there is.

L. Sommer asked if there was a cross section of the weirs. T. Boodey responded they will show a notch on the profile in the application.

K. Benedict asked if we will coordinate with NHFG. T. Boodey responded the need for NHFG coordination prior to construction will be included in the construction sequence.

L. Sommer asked if there will be survey plans. T. Boodey said no, longitudinal profiles will be used. A. O' Sullivan asked if elevations can be shown on the plans. T. Boodey said they can be added to the longitudinal profile.

L. Sommer asked if there will be post construction monitoring. A. O'Sullivan responded there will be monitoring for a period as recommended by NHFG post construction.

T. Boodey concluded by summarizing the ramp and fish weirs will be self-mitigating and the 7 SF of wetland impacts associated with the installation of rip rap at the SW corner of the bridge will require mitigation.

Mitigation Summary

The proposed work and mitigation associated with Sandwich 43487 were discussed on October 19, 2021 with Lori Sommer and Karl Benedict of NHDES, Tim Boodey of NHDOT Bridge Maintenance, and Andrew O'Sullivan and Matt Urban of NHDOT Bureau of Environment.

The proposed work will include a six-inch reinforced concrete invert inside the existing structure, the installation of downstream grade controls (a ramp and two fish weirs), and the installation of rip rap at the NE corner (inlet) and SW corner (outlet) of the bridge. Due to the proposed work and permanent impacts to the palustrine wetland (PEM/PSS1E), the project requires mitigation for those limited impacts. The permanent channel impacts (54 LF) for the fish weirs and ramp are self-mitigating.

The project will permanently impact a total of 7 SF of PEM/PSS1E resulting in an in-lieu fee payment to the ARM fund of $30.27 including DES Administrative cost.

2021 VALUES

TOWN	Equalized Value per Acre B=437 T=43,532
Acworth	1507
Albany	916
Alexandria	2808
Allenstown	9380
Alstead	2805
Alton	22495
Amherst	31637
Andover	4451
Antrim	4259
Ashland	14043
Atkinson	43532
Auburn	21507
Barnstead	8766
Barrington	12457
Bartlett	8797
Bath	1723
Bean's Grant	437
Bean's Purchase	437
Bedford	43532
Belmont	13067
Bennington	4901
Benton	437
Berlin	1572
Bethlehem	1050
Boscawen	7298
Bow	19830
Bradford	4530
Brentwood	20958
Bridgewater	16357
Bristol	14453
Brookfield	2748
Brookline	20745
Cambridge	437
Campton	4509
Canaan	4705
Candia	11533
Canterbury	3903
Carroll	2798
Center Harbor	34922

NHDES AQUATIC RESOURCE MITIGAT
WETLAND PAYMENT CALCULAT
***INSERT AMOUNTS IN YELLOW CELI

	1	**Convert square feet of impact to acr**	
INSERT SQ FT OF IMPACT		Square feet of impact =	7.00
			43560.00
		Acres of impact =	0.0002
	2	**Determine acreage of wetland const**	
		Forested wetlands:	0.0002
		Tidal wetlands:	0.0005
		All other areas:	0.0002
	3	**Wetland construction cost:**	
		Forested wetlands:	$24.21
		Tidal Wetlands:	$48.42
		All other areas:	$24.21
	4	**Land acquisition cost (See land valu**	
INSERT LAND VALUE FROM TABLE WHICH APPEARS TO THE LEFT. (Insert the amount do not copy and paste.)		Town land value:	4216
		Forested wetlands:	$1.02
		Tidal wetlands:	$2.03
		All other areas:	$1.02
	5	**Construction + land costs:**	
		Forested wetland:	$25.23
		Tidal wetlands:	$50.46
		All other areas:	$25.23
	6	**DES Administrative cost:**	
		Forested wetlands:	$5.05
		Tidal wetlands:	$10.09
		All other areas:	$5.05
	**********	**TOTAL ARM PAYMENT**********	
		Forested wetlands:	$30.27

Chandler's Purchase	437
Charlestown	2677
Chatham	597
Chester	14851
Chesterfield	7924
Chichester	8962
Claremont	4684
Clarksville	506
Colebrook	1536
Columbia	521
Concord	31115
Conway	14244
Cornish	2475
Crawford's Purchase	437
Croydon	1681
Cutt's Grant	437
Dalton	1472
Danbury	2030
Danville	20344
Deerfield	8227
Deering	5091
Derry	43532
Dix's Grant	437
Dixville	437
Dorchester	711
Dover	43532
Dublin	5435
Dummer	437
Dunbarton	6005
Durham	31091
East Kingston	23208
Easton	1521
Eaton	2940
Effingham	3216
Ellsworth	559
Enfield	10170
Epping	19158
Epsom	8370
Errol	870
Erving's Location	437
Exeter	43532

Tidal wetlands:	$60.55
All other areas:	$30.27

Sandwich, #43487 Fish Weir Monitoring Plan

In order to establish if the fish weir serves its purpose of maintaining aquatic organism passage from upstream to downstream through the rehabilitated pipe, the condition of the weir and water depths upstream, downstream, and through the project should be compared to each other post-construction for confirmation that the project meets it's intended goals. The information will be collected for a period as recommended by NHF&G post construction to document the projects effectiveness.

Monitoring Protocol:

Monitor during "low flow" stream conditions and for a period as recommended by NHF&G post construction.

1. Check the condition of the weir to ensure it is structurally intact and in good condition.
    a. Weir is still in place.
    b. Weir is not missing any rocks that make up the structural integrity.
    c. Measure the distance from the outlet invert to the weir.
2. Measure the water depth upstream, downstream, and through the project.
3. Observations of water flow.
4. Observations of aquatic life present at time of visit.
5. Photodocumentation. pictures taken:
    a. downstream looking upstream at the weir and culvert,
    b. upstream of the culvert looking downstream at the culvert.
6. Measure the vertical distance from the water surface over the weir to the water surface immediately downstream of the weir.

Wetland Function-Value Evaluation Form

Total area of wetland 14acres Human made? N Is wetland part of a wildlife corridor? N or a "habitat island"? N

Adjacent land use Rural/residential Distance to nearest roadway or other development adjacent to roadway

Dominant wetland systems present ~~PEM1E~~ PSS1E Contiguous undeveloped buffer zone present yes

Is the wetland a separate hydraulic system? NO If not, where does the wetland lie in the drainage basin? middle

How many tributaries contribute to the wetland? TWO Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. —

Latitude 43.886776° Longitude -71.369677°

Prepared by: K. Ryan / D. Benjamin Date 8/24/21

Wetland Impact:
Type PEM/PSS1E Area 7 sqft

Evaluation based on:
Office ____ Field ✓

Corps manual wetland delineation completed? Y ✓ N ____

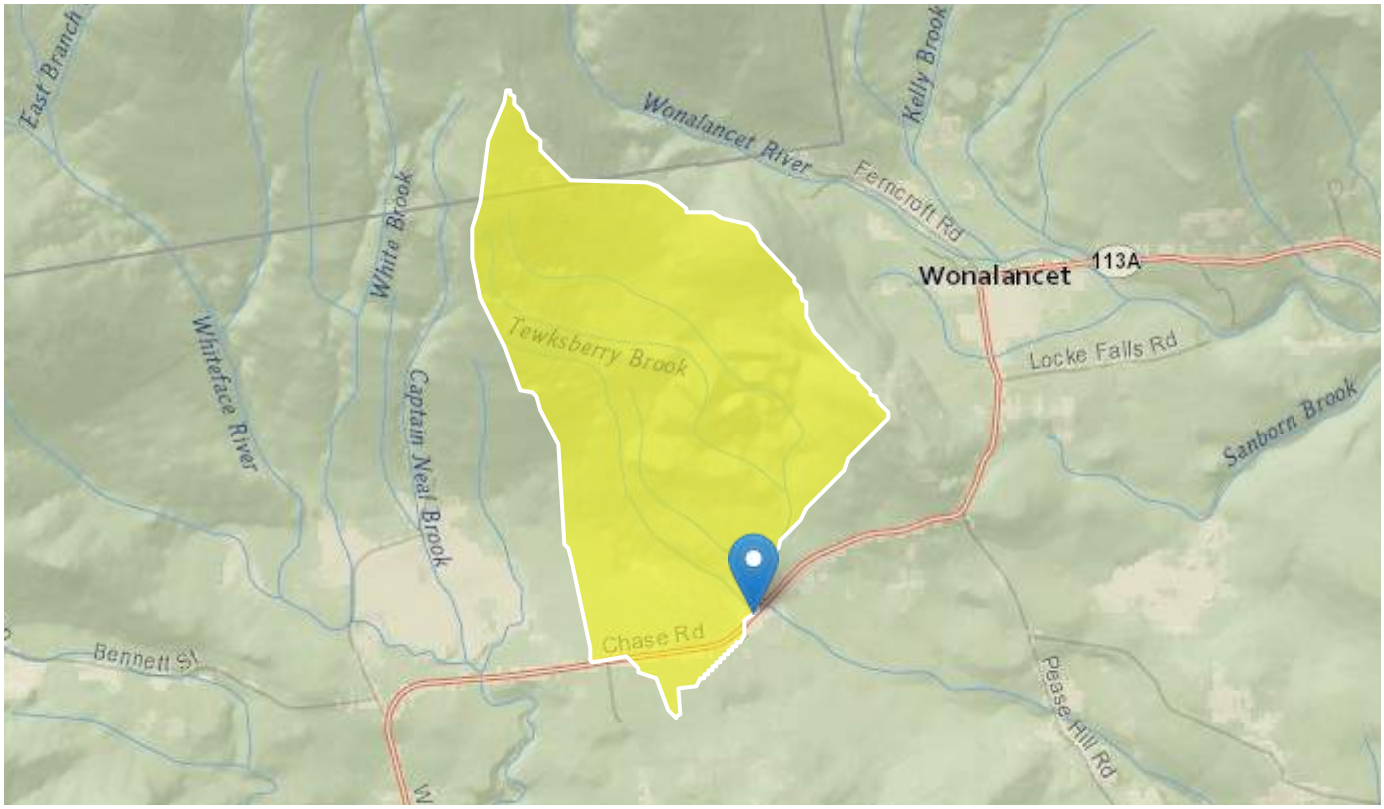
Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	1, 2, 4, 7, 12, 15		Rural/residential, wetland immediately adjacent to stream, undeveloped surrounding area
Floodflow Alteration	Y	5, 6, 7, 8, 9, 10, 11, 13, 14, 17, 18	✓	Natural intact PSS wetland with flood storage capacity, high native species
Fish and Shellfish Habitat	Y	1, 2, 3, 4, 5, 7, 8, 9, 10, 12, 14, 15, 16, 17	✓	Perennial stream, shrub vegetated edges, fish observed (known NHFGData - presence for fish)
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 13		Road adjacent to wetland (result potential), wetland associated with stream, water present in wetland
Nutrient Removal	Y	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14		Heavy wooded vegetated wetland edges, diverse native species present
Production Export	Y	1, 2, 4, 5, 6, 7, 8, 10, 11, 12	✓	Hummingbird observed, diverse plant species/flowering species, opportunity for production export (trophic use potential)
Sediment/Shoreline Stabilization	Y	1, 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15	✓	Potential for high flow velocity during storm events (channelarge culvert); thick/diverse vegetation
Wildlife Habitat	Y	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 13, 14, 15, 16, 17, 18, 19, 20, 21	✓	Hummingbird and fish observed, birdsaudible, diverse vegetation
Recreation	N	5, 6, 7		Pretty, no hunting, no recreation, no fishing, no opportunities
Educational/Scientific Value	N	2, 4, 5		Rural, not easily accessible for buses/no parking, safety ~~concerns~~ hurricanes, no educational opportunities
Uniqueness/Heritage	N	4, 7, 12, 13, 15, 16, 17, 19, 14, 20		Rural, vegetated buffer no educational opportunity
Visual Quality/Aesthetics	~~N~~ Y	1, 2, 3, 4, 5, 7, 8, 10, 11, 12		Diverse, rural/undeveloped area, diverse vegetation seen from roadway
ES Endangered Species Habitat	N			NO known species / habitat
Other				

Notes:

* Refer to backup list of numbered considerations.

Sandwich 43487

Region ID: NH
Workspace ID: NH20210604140309802000
Clicked Point (Latitude, Longitude): 43.88675, -71.36975
Time: 2021-06-04 10:03:27 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream 1,542.4 acres	2.41	square miles
CONIF	Percentaqe of land surface covered by coniferous forest	31.7135	percent
PREBC0103	Mean annual precipitation of basin centroid for January 1 to March 15 winter period	9.8	inches
BSLDEM30M	Mean basin slope computed from 30 m DEM	10.876	percent
MIXFOR	Percentage of land area covered by mixed deciduous and coniferous forest	49.6105	percent

Parameter Code	Parameter Description	Value	Unit
PREG_03_05	Mean precipitation at gaging station location for March 16 to May 31 spring period	10	inches
TEMP	Mean Annual Temperature	41.236	degrees F
TEMP_06_10	Basinwide average temperature for June to October summer period	57.507	degrees F
PREG_06_10	Mean precipitation at gaging station location for June to October summer period	19.6	inches
ELEVMAX	Maximum basin elevation	2309.738	feet

Seasonal Flow Statistics Parameters [Low Flow Statewide]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	2.41	square miles	3.26	689
CONIF	Percent Coniferous Forest	31.7135	percent	3.07	56.2
PREBC0103	Jan to Mar Basin Centroid Precip	9.8	inches	5.79	15.1
BSLDEM30M	Mean Basin Slope from 30m DEM	10.876	percent	3.19	38.1
MIXFOR	Percent Mixed Forest	49.6105	percent	6.21	46.1
PREG_03_05	Mar to May Gage Precipitation	10	inches	6.83	11.5
TEMP	Mean Annual Temperature	41.236	degrees F	36	48.7
TEMP_06_10	Jun to Oct Mean Basinwide Temp	57.507	degrees F	52.9	64.4
PREG_06_10	Jun to Oct Gage Precipitation	19.6	inches	16.5	23.1
ELEVMAX	Maximum Basin Elevation	2309.738	feet	260	6290

Seasonal Flow Statistics Disclaimers [Low Flow Statewide]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Seasonal Flow Statistics Flow Report [Low Flow Statewide]

Statistic	Value	Unit
Jan to Mar15 60 Percent Flow	1.68	ft^3/s
Jan to Mar15 70 Percent Flow	1.42	ft^3/s
Jan to Mar15 80 Percent Flow	1.22	ft^3/s
Jan to Mar15 90 Percent Flow	0.927	ft^3/s
Jan to Mar15 95 Percent Flow	0.741	ft^3/s
Jan to Mar15 98 Percent Flow	0.605	ft^3/s
Jan to Mar15 7 Day 2 Year Low Flow	1.22	ft^3/s
Jan to Mar15 7 Day 10 Year Low Flow	0.681	ft^3/s
Mar16 to May 60 Percent Flow	5.16	ft^3/s
Mar16 to May 70 Percent Flow	4.06	ft^3/s
Mar16 to May 80 Percent Flow	2.93	ft^3/s
Mar16 to May 90 Percent Flow	2.04	ft^3/s
Mar16 to May 95 Percent Flow	1.48	ft^3/s
Mar16 to May 98 Percent Flow	1	ft^3/s
Mar16 to May 7 Day 2 Year Low Flow	1.64	ft^3/s
Mar16 to May 7 Day 10 Year Low Flow	0.898	ft^3/s
Jun to Oct 60 Percent Flow	0.595	ft^3/s
Jun to Oct 70 Percent Flow	0.449	ft^3/s
Jun to Oct 80 Percent Flow	0.371	ft^3/s
Jun to Oct 90 Percent Flow	0.249	ft^3/s
Jun to Oct 95 Percent Flow	0.178	ft^3/s
Jun to Oct 98 Percent Flow	0.153	ft^3/s
Jun to Oct 7 Day 2 Year Low Flow	0.264	ft^3/s
Jun to Oct 7 Day 10 Year Low Flow	0.108	ft^3/s
Nov to Dec 60 Percent Flow	2.45	ft^3/s
Nov to Dec 70 Percent Flow	1.89	ft^3/s
Nov to Dec 80 Percent Flow	1.47	ft^3/s
Nov to Dec 90 Percent Flow	0.966	ft^3/s
Nov to Dec 95 Percent Flow	0.639	ft^3/s

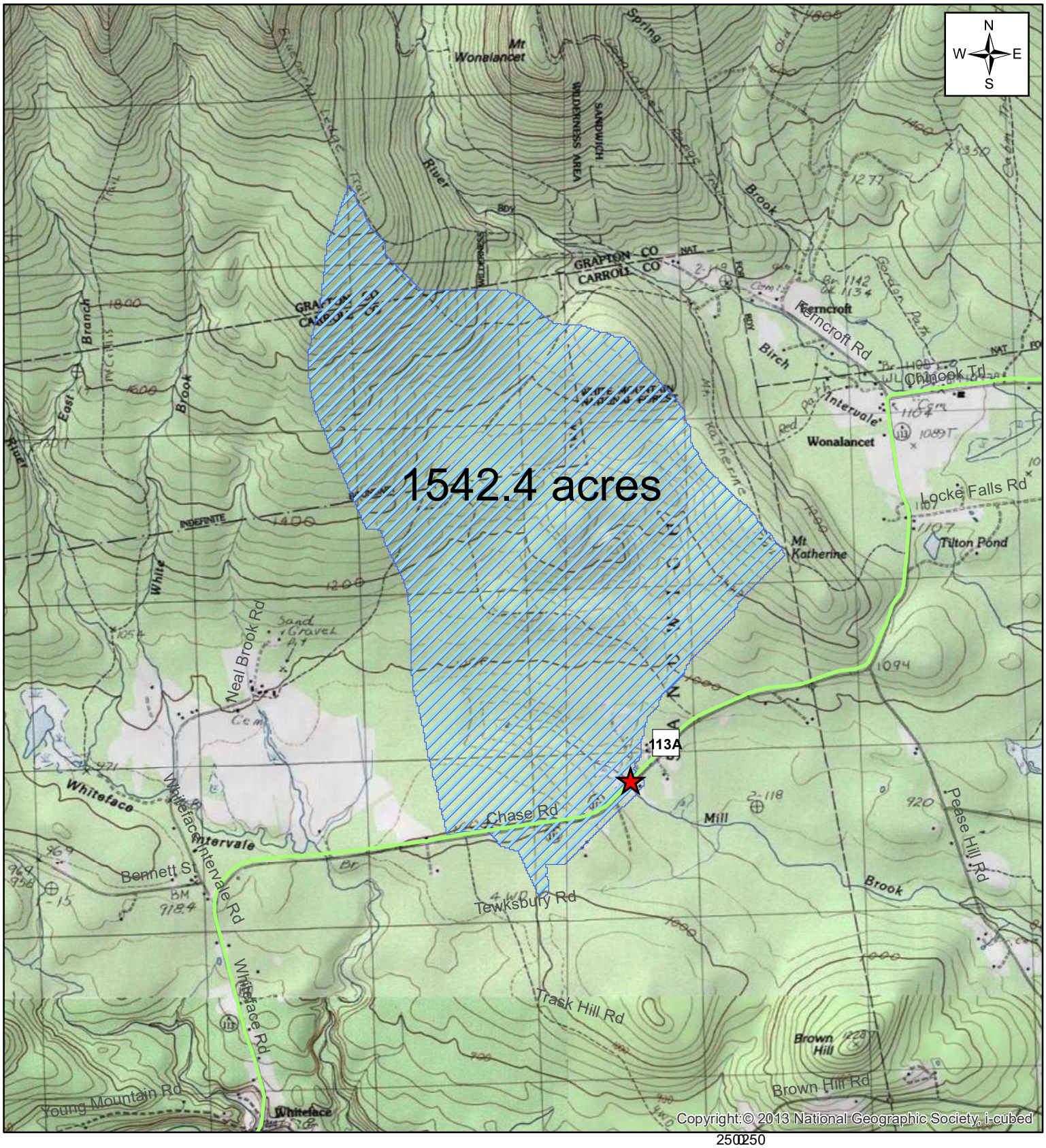
Statistic	Value	Unit
Nov to Dec 98 Percent Flow	0.41	ft^3/s
Oct to Nov 7 Day 2 Year Low Flow	1.43	ft^3/s
Oct to Nov 7 Day 10 Year Low Flow	0.631	ft^3/s

Seasonal Flow Statistics Citations

Flynn, R.H. and Tasker, G.D.,2002, Development of Regression Equations to Estimate Flow Durations and Low-Flow-Frequency Statistics in New Hampshire Streams: U.S.Geological Survey Scientific Investigations Report 02-4298, 66 p. (http://pubs.water.usgs.gov/wrir02-4298)

Application Version: 4.5.3
StreamStats Services Version: 1.2.22
NSS Services Version: 2.1.2

Sandwich, 43487



250 0 250

Feet

1:31,107

Legend

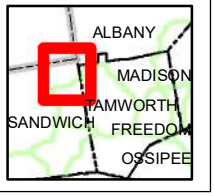
- Project Location
- globalwatershed

Map depicting bridge 226/162 NH 113A over Mill Brook

Map created by: K. Ryan on 6/5/2021

Source: S:\Environment\PROJECTS\SAndwich\43487

New Hampshire DOT
Department of Transportation



WETLANDS PERMIT APPLICATION
STREAM CROSSING WORKSHEET

Land Resources Management
Wetlands Bureau

RSA 482-A/ Env-Wt-900

NOTE: This worksheet can be used to accompany Wetlands Permit Applications when proposing stream crossings.

1. Tier Classifications

Determine the contributing watershed size at USGS StreamStats

Note: Plans for Tier 2 and 3 crossings shall be designed and stamped by a professional engineer who is licensed under RSA 310-A to practice in New Hampshire.

Size of contributing watershed at the crossing location: ____**1542**_____ acres

☐ **Tier 1**: A *tier 1* stream crossing is a crossing located on a watercourse where the contributing watershed size is less than or equal to 200 acres

☐ **Tier 2**: A *tier 2* stream crossing is a crossing located on a watercourse where the contributing watershed size is greater than 200 acres and less than 640 acres

☒ **Tier 3**: A *tier 3* stream crossing is a crossing that meets any of the following criteria:

- ☒ On a watercourse where the contributing watershed is more than 640 acres
- ☐ Within a Designated River Corridor
- ☐ On a watercourse that is listed on the surface water assessment 305(b) report
- ☒ Within a 100-year floodplain (see *section 2* below)
- ☐ In a jurisdictional area having any protected species or habitat (NHB DataCheck)
- ☐ In or within 100 feet of a Prime Wetland

2. 100-year Floodplain

Use the FEMA Map Service Center to determine if the crossing is located within a 100-year floodplain. Please answer the questions below:

☐ **No**: The proposed stream crossing *is not* within the FEMA 100-year floodplain.

☒ **Yes**: The proposed project *is* within the FEMA 100-year floodplain. Zone = **A**

☒ Elevation of the 100-year floodplain at the inlet: **108.25 (Modeled El.)** feet (FEMA El. or Modeled El.)

3. Calculating Peak Discharge

Existing 100-year peak discharge (Q) calculated in cubic feet per second (CFS): **839** CFS	Calculation method: **Stream Stats**
Estimated Bankfull discharge at the crossing location: **100** CFS	Calculation method: **HY-8, Stream Stats**

Note: If Tier 1 then skip to Section 10

4. Predicted Channel Geometry based on Regional Hydraulic Curves

*For **Tier 2** and **Tier 3** Crossings Only*

Bankfull Width: **19.2** feet	Mean Bankfull Depth: **1.6** feet
Bankfull Cross Sectional Area: **31.1** square feet	

5. Cross Sectional Channel Geometry: Measurements of the Existing Stream within a Reference Reach

*For **Tier 2** and **Tier 3** Crossings Only*

Describe the reference reach location: **__Downstream__**

Reference reach watershed size: **_____1542____** acres

Parameter	**Cross Section 1** Describe bed form _____ (*e.g. pool, riffle, glide*)	**Cross Section 2** Describe bed form _____ (*e.g. pool, riffle, glide*)	**Cross Section 3** Describe bed form _____ (*e.g. pool, riffle, glide*)	**Range**
Bankfull Width	**_____16____ feet**	**_____17_____ feet**	**_____17_____ feet**	**____16-17_____ feet**
Bankfull Cross Sectional Area	**_____ 15.9_____ SF**	**_____14.6_____ SF**	**_____19.9_____ SF**	**___14.6-19.9___ SF**
Mean Bankfull Depth	**_____.99_____ feet**	**_____.85_____ feet**	**_____1.17_____ feet**	**___.85-1.17___ feet**
Width to Depth Ratio	**_____16.1_____**	**_____19.8_____**	**____14.5_____**	**____16.1-19._____**
Max Bankfull Depth	**_____1.7____ feet**	**____ _1.6_____ feet**	**_____1.9_____ feet**	**___1.6-1.9____ feet**
Flood Prone Width	**_____25____ feet**	**_____ 23_____ feet**	**_____200_____ feet**	**____23-200_ feet**
Entrenchment Ratio	**_____1.56_____**	**_____1.35_____**	**_____11.7____**	**____1.27-11.7____**

*Use **Figure 1** below to determine the measurements of the Reference Reach Attributes*

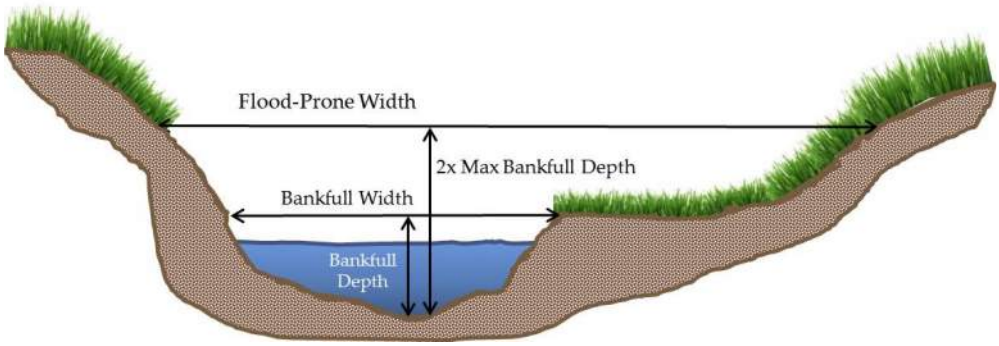


Figure 1: Determining the Reference Reach Attributes

6. Longitudinal Parameters of the Reference Reach and Crossing Location

*For **Tier 2** and **Tier 3** Crossings Only*

Average Channel Slope of the Reference Reach: **1%**

Average Channel Slope at the Crossing Location: **0.02 ft/ft**

7. Plan View Geometry

*For **Tier 2** and **Tier 3** Crossings Only*

Sinuosity of the Reference Reach: **1.3**

Sinuosity of the Crossing Location: **2.3**

Note: Sinuosity is measured a distance of at least 20 times bankfull width, or 2 meander belt widths

8. Substrate Classification based on Field Observations *For **Tier 2** and **Tier 3** Crossings Only*	
% of reach that is *bedrock*	0 %
% of reach that is *boulder*	2 %
% of reach that is *cobble*	3 %
% of reach that is *gravel*	60 %
% of reach that is *sand*	35 %
% of reach that is *silt*	0 %

9. Stream Type of Reference Reach *For **Tier 2** and **Tier 3** Crossings Only*	
Stream Type of Reference Reach:	C

*Refer to Rosgen Classification Chart (**Figure 2**) below*

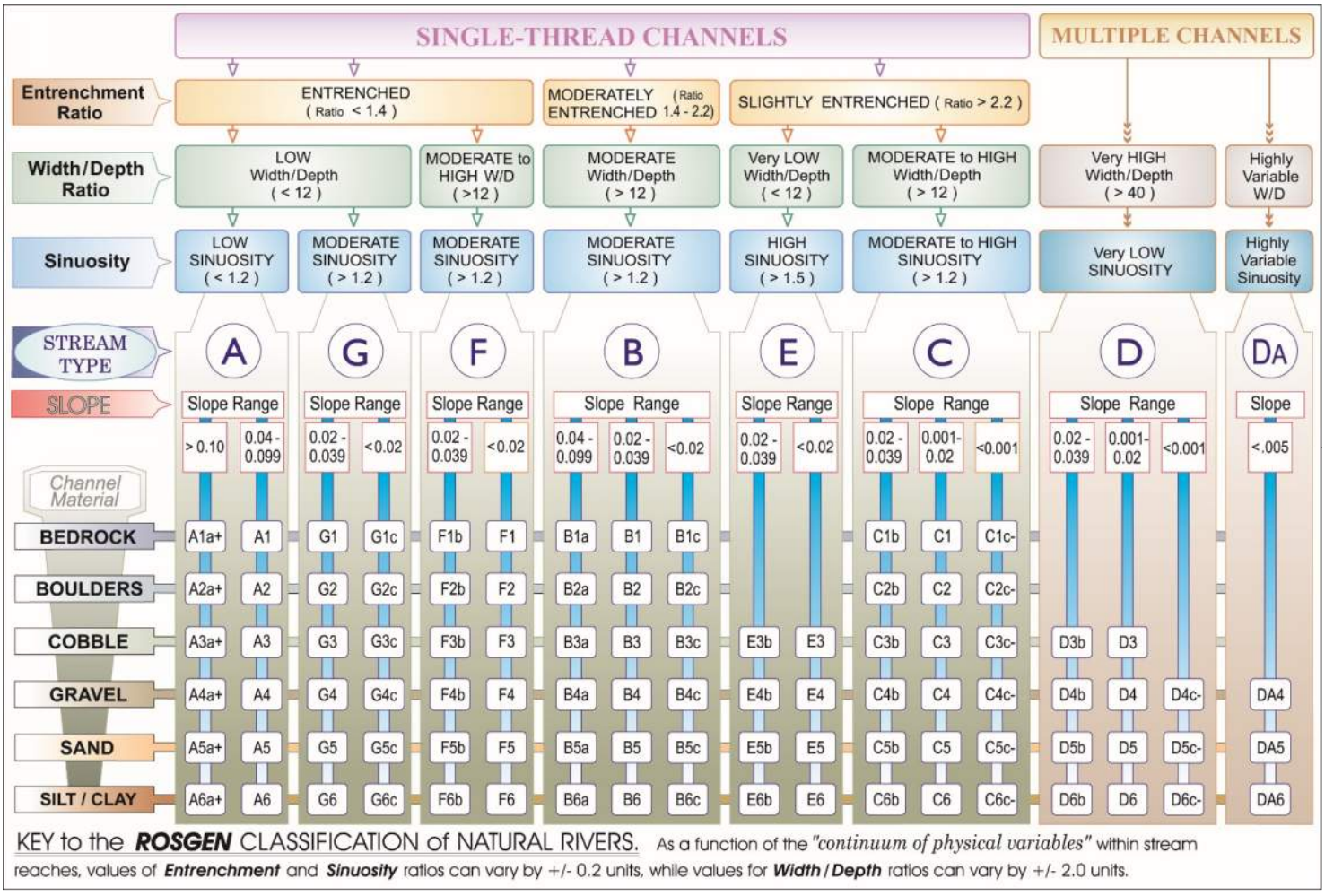


Figure 2. Reference from Applied River Morphology, Rosgen, 1996

10. Crossing Structure Metrics

Existing Conditions

Existing Structure Type:	☐ Bridge Span ☐ Pipe Arch ☐ Open-bottom Culvert ☒ Closed-bottom Culvert ☐ Closed-bottom Culvert with stream simulation ☐ Other: _____	
Existing Crossing Span *(perpendicular to flow)*	**14** feet	**Culvert Diameter** **8.6** feet **Inlet Elevation** **99.83**
Existing Crossing Length *(parallel to flow)*	**68** feet	**Outlet Elevation** **100** **Culvert Slope** **0.02 ft/ft**

Proposed Conditions

Proposed Structure Type:	**Tier 1**	**Tier 2**	**Tier 3**	**Alternative Design**
Bridge Span	☐	☐	☐	☐
Pipe Arch	☐	☐		☐
Closed-bottom Culvert	☐	☐		☐
Open-bottom Culvert	☐	☐	☐	☐
Closed-bottom Culvert with stream simulation	☐	☐	☐	☐

Proposed structure Span *(perpendicular to flow)*	feet	**Culvert Diameter** feet **Inlet Elevation**
Proposed Structure Length *(parallel to flow)*	feet	**Outlet Elevation** **Culvert Slope**
Proposed Entrenchment Ratio* *For **Tier 2** and **Tier 3** Crossings Only*		*Note: To accommodate the entrenchment ratio, floodplain drainage structures may be utilized*

* *Note: Proposed Entrenchment Ratio must meet the minimum ratio for each stream type listed in **Figure 3**, otherwise the applicant must address the Alternative Design criteria listed in Env-Wt 904.09*

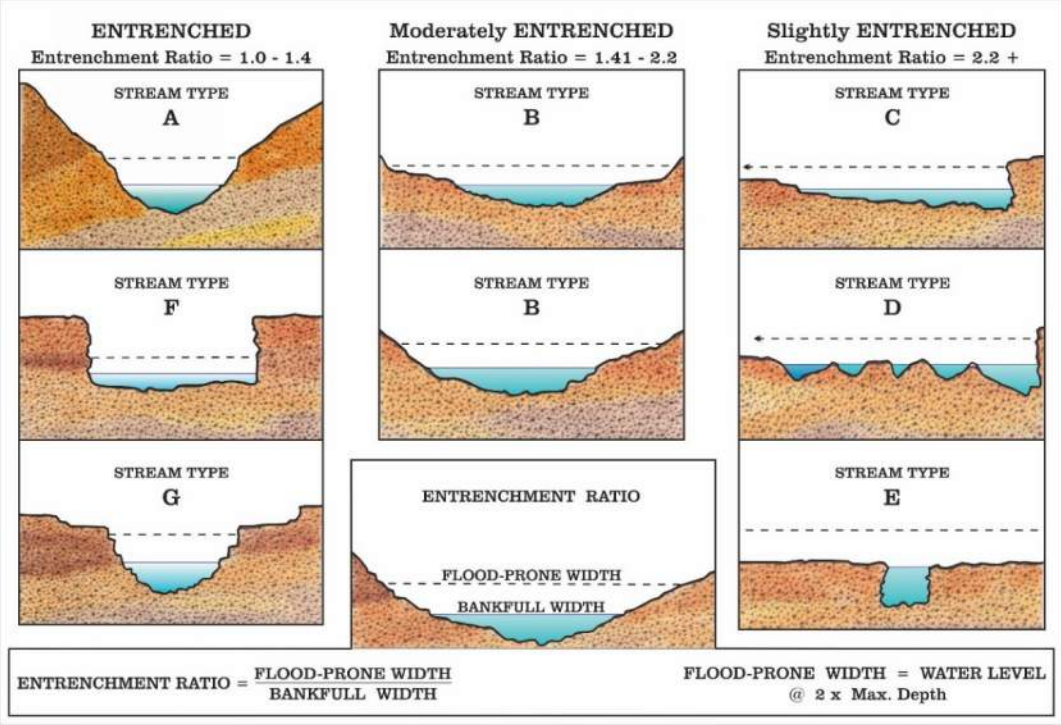


Figure 3. Reference from Applied River Morphology, Rosgen, 1996

11. Crossing Structure Hydraulics

	Existing	Proposed
100 year flood stage elevation at inlet	**108.05**	**108.25**
Flow velocity at outlet in feet per second (FPS)	**12.06**	**12.15**
Calculated 100 year peak discharge (Q) for the proposed structure in CFS		**686**
Calculated 50 year peak discharge (Q) for the proposed structure in CFS		**690**

12. Crossing Structure Openness Ratio

*For **Tier 2** and **Tier 3** Crossings Only*

Crossing Structure Openness Ratio = **1.22**

Openness box culvert = (height x width)/length

Openness round culvert = (3.14 x radius^2)/length

13. General Design Considerations

Env-Wt 904.01 requires all stream crossings to be designed and constructed according to the following requirements. Check each box if the project meets these general design considerations.

All stream crossings shall be designed and constructed so as to:

- ☒ Not be a barrier to sediment transport.
- ☒ Prevent the restriction of high flows and maintain existing low flows.
- ☒ Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous to the waterbody beyond the actual duration of construction.
- ☒ Not cause an increase in the frequency of flooding or overtopping of banks.
- ☒ Preserve watercourse connectivity where it currently exists.
- ☐ Restore watercourse connectivity where:
  (1) Connectivity previously was disrupted as a result of human activity(ies); and
  (2) Restoration of connectivity will benefit aquatic life upstream or downstream of the crossing, or both.
- ☒ Not cause erosion, aggradation, or scouring upstream or downstream of the crossing.
- ☒ Not cause water quality degradation.

14. Tier Specific Design Criteria

Stream crossings must be designed in accordance with the Tier specific design criteria listed in Part Env-Wt 904.

☒ The proposed project meets the Tier specific design criteria listed in Part Env-Wt 904 and each requirement has been addressed in the plans and as part of the wetland application.

15. Alternative Design

NOTE: If the proposed crossing does not meet all of the general design considerations, the Tier specific design criteria, or the minimum entrenchment ratio for each given stream type listed in **Figure 3**, then an alternative design plan and associated requirements must be addressed pursuant to Env-Wt 904.09.

☐ I have submitted an alternative design and addressed each requirement listed in Env-Wt 904.09

NH Department of Transportation

Bureau of Bridge Maintenance
Project: Sandwich 226/162; #43487
Prepared by: Timothy Boodey, P.E.

Stream Crossing Rules for Standard Application Tier 3, repair/preservation/rehabilitation project Hydraulic Report/ Summary

Crossing's Drainage Area: 2.41 square mile

Existing Conditions: This existing structural plate culvert was constructed in 1957. There has not been any major preservation or rehabilitation work at this crossing since its original construction date. The bridge was placed on the Department's Red List July 2018 due to the deteriorated condition of its walls due to corrosion. There is some erosion damage on the downstream due in part due to roadway drainage running down the slope and previously placed rip rap at the inlet needs repair. The outlet of the culvert is perched approximately eight inches above the stream bed. There is no history of flooding over the bridge or roadway at this crossing. The crossing was modeled using information from NH StreamStats in HY-8 based on existing conditions. The crossing is inlet controlled during high flows. Based on this model, the crossing will convey a 100-year storm event without overtopping the roadway.

Project Description: This project involves the installation of a reinforced concrete invert in the culvert invert and into the bottom corners. This concrete invert will stabilize the remaining structure, remove the bridge from the Red List and extend the life of the crossing. Due to the perched condition of the existing culvert and the addition of six inches of elevation change two grade control structures will be added to the outlet of the structure. The intent of these earthen and stone structures is to maintain water connectivity through the culvert during all flows. The project plans elsewhere in this application for more details on the weirs. A stone and earthen ramp will be installed at the outlet creating soil connectivity between the new concrete invert and the existing stream bed. The weirs and ramp will utilize material from the stream dredged as part of the construction work with additional material brought in as needed to supplement using the existing soil as a model. The existing rip rap on the inlet side will be repaired and replaced in kind and rip rap will be added as shown on the impact plan.

Proposed Conditions:
We reviewed the post construction addition of the reinforced concrete invert. The crossing will convey the 100-year storm event. The existing and proposed water surface elevations are shown on the longitudinal profile plan elsewhere in this application. The structure is inlet controlled and the water surface elevation changes pre and post construction three inches, with both below the elevation of the road embankment. The change of flooding over the roadway is not increased for this storm by this project. The installation of the two grade control structures, and pools in front of them, will work to mitigate the small increase in downstream velocity. I have looked at the proposed flows we would expect to see during construction and based on our proposed forming and construction sequence I do not expect any problems completing the project.

Included with this form is supporting analysis by way of photos and plans

Env-Wt 904.01 General Design Considerations Applicable to All Stream Crossings

(a) All stream crossings, whether over tidal or non-tidal waters, shall be designed and constructed soas to:

1) Not be a barrier to sediment transport;
2) Not restrict high flows and maintain existing low flows;
3) Not obstruct or otherwise substantially disrupt the movement of aquatic life indigenous tothe waterbody beyond the actual duration of construction;
4) Not cause an increase in the frequency of flooding or overtopping ofbanks;
5) Maintain or enhance geomorphic compatibility by:
    a. Minimizing the potential for inlet obstruction by sediment, wood, or debris; and
    b. Preserving the natural alignment of the stream channel;
6) Preserve watercourse connectivity where it currently exists;
7) Restore watercourse connectivity where:
    a. Connectivity previously was disrupted as a result of human activity(ies); and
    b. Restoration of connectivity will benefit aquatic life upstream or downstream ofthe crossing, or both;
8) Not cause erosion, aggradation, or scouring upstream or downstream of the crossing; and
9) Not cause water quality degradation.

(b) For stream crossing over tidal waters, the stream crossing shall be designed to:

1) Match the velocity, depth, cross-sectional area, and substrate of the natural stream: and
2) Be of sufficient size to not restrict bi-directional tidal flow over the natural tide range above, below, and through the crossing.

Env-Wt 904.09(a)- The repair, rehabilitation, or replacement of tier 3 stream crossings shall be limited to existing legal crossings where the tier classification is based only on the size of the contributing watershed.

Env-Wt 904.09(b)- Rehabilitation of a culvert or other closed-bottom stream crossing structure pursuant to this section may be accomplished by concrete repair, slip lining, cured-in place lining, or concrete invert lining, or any combination thereof, except that slip lining shall not occur more than once.
(Not applicable to repair)

Env-Wt 904.09(c) A project shall qualify under this section only if a professional engineer certifies, and provides supporting analyses to show, that:

(1) The existing crossing does not have a history of causing or contributing to flooding thatdamages the crossing or other human infrastructure or protected species habitat;

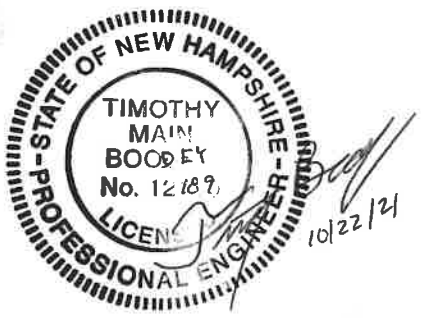
(2) The proposed stream crossing will:
    a. Meet the general criteria specified in Env-Wt 904.01;
    (see page 2 of this form for Env-Wt 904.01)
    b. Maintain or enhance the hydraulic capacity of the stream crossing;
    c. Maintain or enhance the capacity of the crossing to accommodate aquatic organism passage;
    d. Maintain or enhance the connectivity of the stream reaches upstream or downstream ofthe crossing; and
    e. Not cause or contribute to the increase in the frequency of flooding or overtopping ofthe banks upstream or downstream of the crossing.

Env-Wt 904.09(d) Repair, rehabilitation, or replacement of a tier 4 stream crossing shall comply with Env-Wt 904.07(d).
(if non-tidal, N/A)

I hereby certify that the above referenced project meets the criteria of Env-Wt 904.09(c).

Name: Timothy Boodey, P.E.

Date: 10/22/2021



New Hampshire Natural Heritage Bureau
NHB DataCheck Results Letter

To: Kerry Ryan
7 Hazen Drive
Concord, NH 03301

From: NH Natural Heritage Bureau

Date: 6/11/2021 (This letter is valid through 6/11/2022)

Re: Review by NH Natural Heritage Bureau of request dated 6/11/2021

Permit Types: Wetland Standard Dredge & Fill - Major
General Permit

NHB ID: NHB21-1987

Applicant: Kerry Ryan

Location: Sandwich
Tax Map: NA, Tax Lot: NA
Address: Chase Road

Proj. Description: The proposed project is a bridge maintenance project located on NH Route 113A over Mill Brook in Sandwich. This project proposes to install a concrete invert inside an existing elliptical steel-corrugated pipe, repair toe walls and install rip rap.

The NH Natural Heritage database has been checked for records of rare species and exemplary natural communities near the area mapped below. The species considered include those listed as Threatened or Endangered by either the state of New Hampshire or the federal government. We currently have no recorded occurrences for sensitive species near this project area.

A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

MAP OF PROJECT BOUNDARIES FOR: NHB21-1987

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord NH 03301

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To:
Consultation Code: 05E1NE00-2021-SLI-3620
Event Code: 05E1NE00-2022-E-00938
Project Name: Sandwich 43287

October 22, 2021

Subject: Updated list of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-3620
Event Code: Some(05E1NE00-2022-E-00938)
Project Name: Sandwich 43287
Project Type:
Project Description: The proposed project is a bridge maintenance project located on NH Route 113A over Mill Brook in Sandwich NH. The proposed project includes installing a concrete invert in MP pipe, repair toe walls and install rip rap. A fish weir at the outlet may also be included. All proposed work is within the State right-of-way.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.88672785,-71.36963669327379,14z

Counties: Carroll County, New Hampshire

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

IPaC Record Locator: 516-102936378 June 11, 2021

Subject: Consistency letter for the 'Sandwich 43287' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Kerry Ryan:

The U.S. Fish and Wildlife Service (Service) received on June 11, 2021 your effects determination for the 'Sandwich 43287' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

---

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Sandwich 43287

2. Description

The following description was provided for the project 'Sandwich 43287':

> The proposed project is a bridge maintenance project located on NH Route 113A over Mill Brook in Sandwich NH. The proposed project includes installing a concrete invert in MP pipe, repair toe walls and install rip rap. A fish weir at the outlet may also be included. All proposed work is within the State right-of-way.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.88672785,-71.36963669327379,14z

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

   No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0.1

2. If known, estimated acres of forest conversion from April 1 to October 31

0.1

3. If known, estimated acres of forest conversion from June 1 to July 31

0.1

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: 6/15/2021
(Desktop or Field Review Date)

☒ This Project uses only State funding; however project activities listed below comply with the PA.

Project Name: Sandwich

State Number: 43487 **FHWA Number:** NA

Environmental Contact: Kerry Ryan **DOT**
Email Address: Kerry.a.ryan@dot.nh.gov **Project Manager:** Tim Boodey

Project Description: The proposed project is a State funded bridge maintenance project located on NH Route 113A over Mill Brook in Sandwich, Br. No. 226/162, built 1957. The purpose of the project is to rehabilitate the existing bridge in order to remove it from the NHDOT Red List. The proposed scope is to install a concrete invert in the metal pipe, repair toe walls, and install rip rap. The installation of a fish weir at the outlet is also being considered. Roadway expansion or increase in impervious surface is not anticipated. All proposed work is within the State right-of-way.

Please select the applicable activity/activities:

Highway and Roadway Improvements	
☐	1. Modernization and general highway maintenance **that may require additional highway right-of-way or easement**, including: Choose an item. Choose an item.
☐	2. Installation of rumble strips or rumble stripes
☐	3. Installation or replacement of pole-mounted signs
☐	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
☐	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
☐	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
☐	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, **that may require minor additional right-of-way or easement**, including: a. replacement or maintenance of non-historic bridges Choose an item.
☐	8. Historic bridge maintenance activities within the limits of existing right-of-way, including:
☒	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	
☐	10. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons
☐	11. Installation of bicycle racks
☐	12. Recreational trail construction
☐	13. Recreational trail maintenance when done on existing alignment
☐	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way
Railroad Improvements	
☐	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or

Appendix B Certification – Activities with Minimal Potential to Cause Effects

	highway right-of-way, **provided no historic railroad features are impacted,** including, but not limited to: Choose an item. Choose an item.
☐	16. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old)
☐	17. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted
Other Improvements	
☐	18. Installation of Intelligent Transportation Systems
☐	19. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements where no construction will occur
☐	20. Rehabilitation or replacement of existing storm drains.
☐	21. Maintenance of stormwater treatment features and related infrastructure

Please describe how this project is applicable under Appendix B of the Programmatic Agreement.

The proposed project activities conform to undertakings in Appendix B (minimal potential to cause effects to historical resources) including (7) Non-historic bridge and culvert maintenance, renovation, or total replacement, that may require minor additional right-of-way or easement, including a. replacement or maintenance of non-historic bridges; 9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions). Through coordination with the Cultural Resources Program and Department of Historic Resources, it was determined the metal arch corrugated pipe complies with the NH Recordation of Bridges that Apply to the Program Comment for Common Post-1945 Concrete & Steel Bridges and is exempt from eligibility determinations for the National Register of Historic Places. Therefore, it was determined that the proposed project has minimal potential to impact historical resources. Neither the Cultural Resources Program Manager nor the Cultural Resources Program Specialist detected any cultural resources that, based on the project scope, were determined to be likely to be impacted by the project.

Please submit this Certification Form along with the Transportation RPR, including photographs, USGS maps, design plans and as-built plans, if available, for review. Note: The RPR can be waived for in-house projects, please consult Cultural Resources Program Staff.

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	Click here to enter text.
Please identify public outreach effort contacts; method of outreach and date:	Initial Contact Letters were sent to the conservation committee chair, fire chief historical society chair, planning committee chair, police chief, road agent, chairman of selectmen, and town administrator in Sandwich on 6/3/21. The Department of Natural & Cultural Resources-Land & Water Conservation Fund Program, Land & Community Investment Program, and Conservation Land Stewardship Program were contacted on 6/15/21.		

Finding: (To be filled out by NHDOT Cultural Resources Staff)

☒	**No Potential to Cause Effects**	☐	**No Historic Properties Affected**
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
☐	**This project does *not* comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.**		
	NHDOT comments:		

6/15/2021

NHDOT Cultural Resources Staff | Date

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption a project is limited to the activities listed in Appendix B until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Every project shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the New Hampshire State Historic Preservation Office, the Army Corps of Engineers, New England District, the Advisory Council on Historic Preservation, and the New Hampshire Department of Transportation Regarding the Federal Aid Highway Program in New Hampshire*. In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

NHDOT and the State Historic Preservation Office may use provisions of the Programmatic Agreement to address the applicable requirements of NH RSA 227-C:9 in the location, identification, evaluation and management of historic resources, for projects funded by State funds.

If any portion of the project is not entirely limited to any one or a combination of the activities specified in Appendix B (with, or without the inclusion of any activities listed in Appendix A), please continue discussions with NHDOT Cultural Resources staff.

This No Potential to Cause Effect or No Historic Properties Affected project determination is your Section 106 finding, as defined in the Programmatic Agreement.

Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.

New Hampshire Recordation of Bridges that Apply to the Program Comment for Common Post-1945 Concrete & Steel Bridges

Project Name: Sandwich

State Number: 43487 **FHWA Number:** NA

Form Completed by: Kerry Ryan **Date:** 6/15/21
Email if not NHDOT staff: Click here to enter text.

43487

Town SANDWICH **NHDOT Bridge No** 226/162

Year Built (rebuilt) 1957 **Owner** NHDOT

Road carrying NH Route 113A **Over feature** Water, Mill Brook

Bridge/culvert Type Elliptical steel-corrugated metal arch pipe **Number of Spans** NA

Length 65’ **Width** 10’

Abutment style NA **Pier style** NA

Reviewed by: Sheila Charles **Date Reviewed:** 6/15/2021

NHDOT Cultural Resources Staff

Approved ☒ **Not Approved** ☐ **Justification:** **Complies with Program Comment & Section 106 PA Appendix B**

RPR Number:_____ **Reviewed under PA:** ____X____

Created March 27, 2014 **Updated September 15, 2014**

Rail Type	Cable guardrail	**Rail installation date:**	Unknown
Designer/Engineer (if known)	Tim Boodey	**Bridge Plaques or Engravings?**	No

Please refer to the *NHDOT Guidance on Using the Program Comment for Common Post-1945 Concrete and Steel Bridges*, located on the NHDOT Bureau of Environment Website, for information on using this form: http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/cultural.htm

Information on specific bridges can be found on the NHDOT Bureau of Bridge Design **Bridge Summary** Spreadsheet: http://www.nh.gov/dot/org/projectdevelopment/bridgedesign/documents.htm.

(Additional photographs may be attached here if needed).

US Army Corps of Engineers®
New England District

Appendix B

Regional General Permits (GPs)
Required Information and Corps Secondary Impacts Checklist

In order for the Corps of Engineers to properly evaluate your application, applicants must submit the following information along with the New Hampshire DES Wetlands Bureau application or permit notification forms. Some projects may require more information. For a more comprehensive checklist, go to www.nae.usace.army.mil/regulatory, "Forms/Publications" and then "Application and Plan Guideline Checklist." Check with the Corps at (978) 318-8832 for project-specific requirements. For your convenience, this Appendix B is also attached to the State of New Hampshire DES Wetlands Bureau application and Permit by Notification forms.

All Projects:

- Corps application form (ENG Form 4345) as appropriate.
- Photographs of wetland/waterway to be impacted.
- Purpose of the project.
- Legible, reproducible black and white (no color) plans no larger than 11"x17" with bar scale. Provide locus map and plan views of the entire property.
- Typical cross-section views of all wetland and waterway fill areas and wetland replication areas.
- In navigable waters, show mean low water (MLW) and mean high water (MHW) elevations. Show the high tide line (HTL) elevations when fill is involved. In other waters, show ordinary high water (OHW) elevation.
- On each plan, show the following for the project:
- Vertical datum and the NAVD 1988 equivalent with the vertical units as U.S. feet. Don't use local datum. In coastal waters this may be mean higher high water (MHHW), mean high water (MHW), mean low water (MLW), mean lower low water (MLLW) or other tidal datum with the vertical units as U.S. feet. MLLW and MHHW are preferred. Provide the correction factor detailing how the vertical datum (e.g., MLLW) was derived using the latest National Tidal Datum Epoch for that area, typically 1983-2001.
- Horizontal state plane coordinates in U.S. survey feet based on the Traverse Mercator Grid system for the State of New Hampshire (Zone 2800) NAD 83.
- Show project limits with existing and proposed conditions.
- Limits of any Federal Navigation Project in the vicinity of the project area and horizontal State Plane Coordinates in U.S. survey feet for the limits of the proposed work closest to the Federal Navigation Project;
- Volume, type, and source of fill material to be discharged into waters and wetlands, including the area(s) (in square feet or acres) of fill in wetlands, below the ordinary high water in inland waters and below the high tide line in coastal waters.
- Delineation of all waterways and wetlands on the project site,:
- Use Federal delineation methods and include Corps wetland delineation data sheets. See GC 2 and www.nero.noaa.gov/hcd for eelgrass survey guidance.
- GP 3, Moorings, contains eelgrass survey requirements for the placement of moorings.
- For activities involving discharges of dredged or fill material into waters of the U.S., include a statement describing how impacts to waters of the U.S. are to be avoided and minimized, and either a statement describing how impacts to waters of the U.S. are to be compensated for (or a conceptual or detailed mitigation plan) or a statement explaining why compensatory mitigation should not be required for the proposed impacts. Please contact the Corps for guidance.

US Army Corps of Engineers ®
New England District

New Hampshire General Permits (GPs)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*		x
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?	x	
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		x
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	x	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		x
2.5 The overall project site is more than 40 acres?		x
2.6 What is the area of the previously filled wetlands?	unknown	
2.7 What is the area of the proposed fill in wetlands?	unknown	
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?	unknown	
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	x	

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.	X	
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?		
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?	X	
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		x
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review**)** with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**		X***

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.
`

***Project complies with Section 106 Programmatic Agreement, Appendix B Certification.

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sandwich 43497 City/County: Sandwich/Carroll Sampling Date: 8/24/21

Applicant/Owner: NHDOT State: NH Sampling Point: Wetland

Investigator(s): D. Benjamin / K. Ryan Section, Township, Range: —

Landform (hillslope, terrace, etc.): Wetland Local relief (concave, convex, none): Concave Slope (%): _____

Subregion (LRR or MLRA): LRR Lat: 43.858676 Long: -71.369677 Datum: _____

Soil Map Unit Name: — NWI classification: PEMA/PSS1G

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No ✓ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No _____	**Is the Sampled Area within a Wetland?** Yes ✓ No _____
Hydric Soil Present?	Yes ✓	No _____	If yes, optional Wetland Site ID: _____
Wetland Hydrology Present?	Yes ✓	No _____	

Remarks: (Explain alternative procedures here or in a separate report.)

Unseasonably high rain

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ✓ High Water Table (A2)
- ✓ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ✓ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ✓ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ✓ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ✓	No _____	Depth (inches): _____
Water Table Present?	Yes ✓	No _____	Depth (inches): _____
Saturation Present? (includes capillary fringe)	Yes ✓	No _____	Depth (inches): _____

Wetland Hydrology Present? Yes ✓ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: High Unseasonable rain

VEGETATION – Use scientific names of plants.

Sampling Point: Wetland

Tree Stratum (Plot size: 30')	Absolute % Cover	Dominant Species?	Indicator Status
1. Larix laricina	25	✓	FACW
2.			
3.			
4.			
5.			
6.			
7.			
	25 = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Salix ~~pedicellaris~~ nigra	35	✓	OBL
2. Ulmus americana	10		FACW
3. Spirea alba	50	✓	FACW
4. Acer rubrum	3		FAC
5.			
6.			
7.			
	98 = Total Cover		
Herb Stratum (Plot size: 5')			
1. Eupatorium perfoliatum	5		FACW
2. Phalaris arundinacea	80	✓	FACW
3. Spirea alba	15		FACW
4. Spirea tomentosa	5		FACW
5. Salix nigra	25		OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	130 = Total Cover		
Woody Vine Stratum (Plot size: —)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 =
FACW species	x 2 =
FAC species	x 3 =
FACU species	x 4 =
UPL species	x 5 =
Column Totals: (A)	(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks: (Include photo numbers here or on a separate sheet.)

Photos on a seperate sheet #'s 11 & 12

Sandwich 9348?

SOIL

Sampling Point: WetHun1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
5-0	10yr 2/2	95	7.5y 5/8	5	C	PL	organic	
0-7	10yr 2/1	95	7.5y 5/8	5	C	M	FSL	
7-24+	10yr 3/1	85	7.5y 5/8	10	C	M	SL	
"	"	"	2.5y 4/1	5	R	M		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✓ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✓ No ____

Remarks:

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Sandwich 43457 City/County: Sandwich / Carroll Sampling Date: 8/24/21

Applicant/Owner: NHDOT State: NH Sampling Point: Upland

Investigator(s): D. Benjamin / K. Ryan Section, Township, Range: —

Landform (hillslope, terrace, etc.): Roadshoulder Local relief (concave, convex, none): Slope Slope (%): 0-4

Subregion (LRR or MLRA): LRR Lat: 43.888676° Long: -71.36967° Datum: —

Soil Map Unit Name: — NWI classification: —

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.) Recent rain

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ✓

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ✓	**Is the Sampled Area within a Wetland?** Yes ____ No ✓
Hydric Soil Present?	Yes ____ No ✓	
Wetland Hydrology Present?	Yes ____ No ✓	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
- Unseasonably high rainfall
- Upland data plot is roadshoulder : likely seed mix

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____ No ✓	Depth (inches): ____
Water Table Present?	Yes ____ No ✓	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____ No ✓	Depth (inches): ____

Wetland Hydrology Present? Yes ____ No ✓

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
- Unseasonably high rainfall
- Upland data plot is roadshoulder : likely seed mix

VEGETATION – Use scientific names of plants. Sampling Point: upland

Tree Stratum (Plot size: NA)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
	Ø = Total Cover		
Sapling/Shrub Stratum (Plot size: 15')			
1. Pinus strobus	10%	✓	FACU
2. Abies balsamea	1%		FAC
3.			
4.			
5.			
6.			
7.			
	11% = Total Cover		
Herb Stratum (Plot size: 5')			
1. Solidago canadensis	50	✓	FACU
2. Rubus flagellaris	35		FACU
3. Pinus strobus	5		FACU
4. Acer rubrum	10		FAC
5. Spirea japonica	20		UPL
6. Phalaris arundinacea	60	✓	FACW
7. Polytrichum commune			NI
8.			
9.			
10.			
11.			
12.			
	180 = Total Cover		
Woody Vine Stratum (Plot size: NA)			
1.			
2.			
3.			
4.			
	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	1	x 3 =	3
FACU species	110	x 4 =	440
UPL species	20	x 5 =	100
Column Totals:	131 (A)		543 (B)

Prevalence Index = B/A = ~~4.14~~ 16

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks: (Include photo numbers here or on a separate sheet.)

only available upland plot is a managed road shoulder; no tree species in plot

Photos on a seperate sheet #15 9 & 10

Sandwich 43457

SOIL

Sampling Point: Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-24	10yr 3/2	100	-	-	-	-	FSL	cobble present as a result of being fill material

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R, MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✓

Remarks:

Road shoulder - fill material

Sandwich, 43487: Bridge 226/162 carrying NH Route 113A over Rix Brook

1. NH Route 113A, looking SW towards the structure

2. NH Route 113A, looking NE away from the structure

Sandwich, 43487: Bridge 226/162 carrying NH Route 113A over Rix Brook

3. Looking upstream

4. Looking towards the structure from on the upstream side

5. Looking downstream

6. Looking towards the structure on the downstream side

7. NW corner of the structure with existing rip rap circled

8. SW corner of the structure with proposed rip rap location circled and evidence of an existing perched condition

9. Upland soils

10. Upland vegetation

11. Wetland soils

12. Wetland vegetation

CONSTRUCTION SEQUENCE

Work is anticipated to take approximately four months to complete and is currently proposed to be done during the winter 2021-2022. Work will be phased; install concrete invert, install two fish weirs at the outlet, install rip rap at the NW (inlet) and SW (outlet) corners of the pipe.

1. Erosion control barrier will be added prior to earth disturbing activities.

2. Sediment basins will be placed at appropriate locations on the upstream and downstream side of the culvert.

3. A clean water bypass pipe will be installed to maintain flows during construction along with sandbag cofferdams to divert water away from the work areas and into the bypass pipe. Water collecting within the cofferdams will be pumped into the dewatering basins prior to being introduced back into the stream. Cofferdams and the clean water bypass pipe will be in place during the majority of the time it takes to complete the work. Work is proposed to be done during the winter; therefore, it is anticipated that the bypass pipe will only pass winter volumes.

4. The reinforced concrete invert will be installed within the existing corrugated metal pipe.

5. Rip rap will be installed at the NW corner (inlet) and SW corner (outlet) of the pipe.

6. The ramp at the outlet will be installed. Rip rap will be installed as the base material and a gradation of smaller stones and then gravel applied to fill the void spaces of the larger rip rap. Naturally occurring, dredged material from this location will be reused to top off the ramp. Any additional material needed to top off the ramp will match as closely as possible the existing streambed material (see gradation on the Wetland Impact Map)

7. Once the concrete is sufficiently cured the cofferdams and clean water bypass will be relocated to the downstream area where the two fish weirs will be installed. Water collecting within the cofferdams will be pumped into the downstream dewatering basin.

8. NHDOT personnel will contact NHF&G prior to the construction of the fish weirs to coordinate and review the work during construction and make adjustments as needed.

9. Two fish weirs will be constructed downstream of the pipe in order to back up water through the pipe during low flows and allow for fish passage. The areas of installation will be excavated and the dredged material saved. Rip rap will be installed as the base material and a gradation of smaller stones and then gravel applied to fill the void spaces of the larger rip rap. Naturally occurring, dredged material from this location will be reused to top off the weirs. Any additional material needed to top off the ramp will match as closely as possible the existing streambed material (see gradation on the Wetland Impact Map). See the longitudinal profiles for the proposed center notch elevations and typical section.

10. Upon the completion of stream work, the sandbag cofferdams and clean water bypass will be removed.

11. Erosion control barrier will remain in place until slopes are stabilized by vegetation.

Note:

A. The Project will utilize BMP's from the Best Management Practices manual during all phases of construction.
B. Dewatering System Details per Env-WT 903.03

(e) The following information about the dewatering system proposed to be used:

(1) Estimated maximum flow anticipated during construction;

During the proposed time of construction when the clean water bypass will be in place, we anticipate a maximum flow of 173 CFS.

(2) The location, height, and width of the diversion dam;

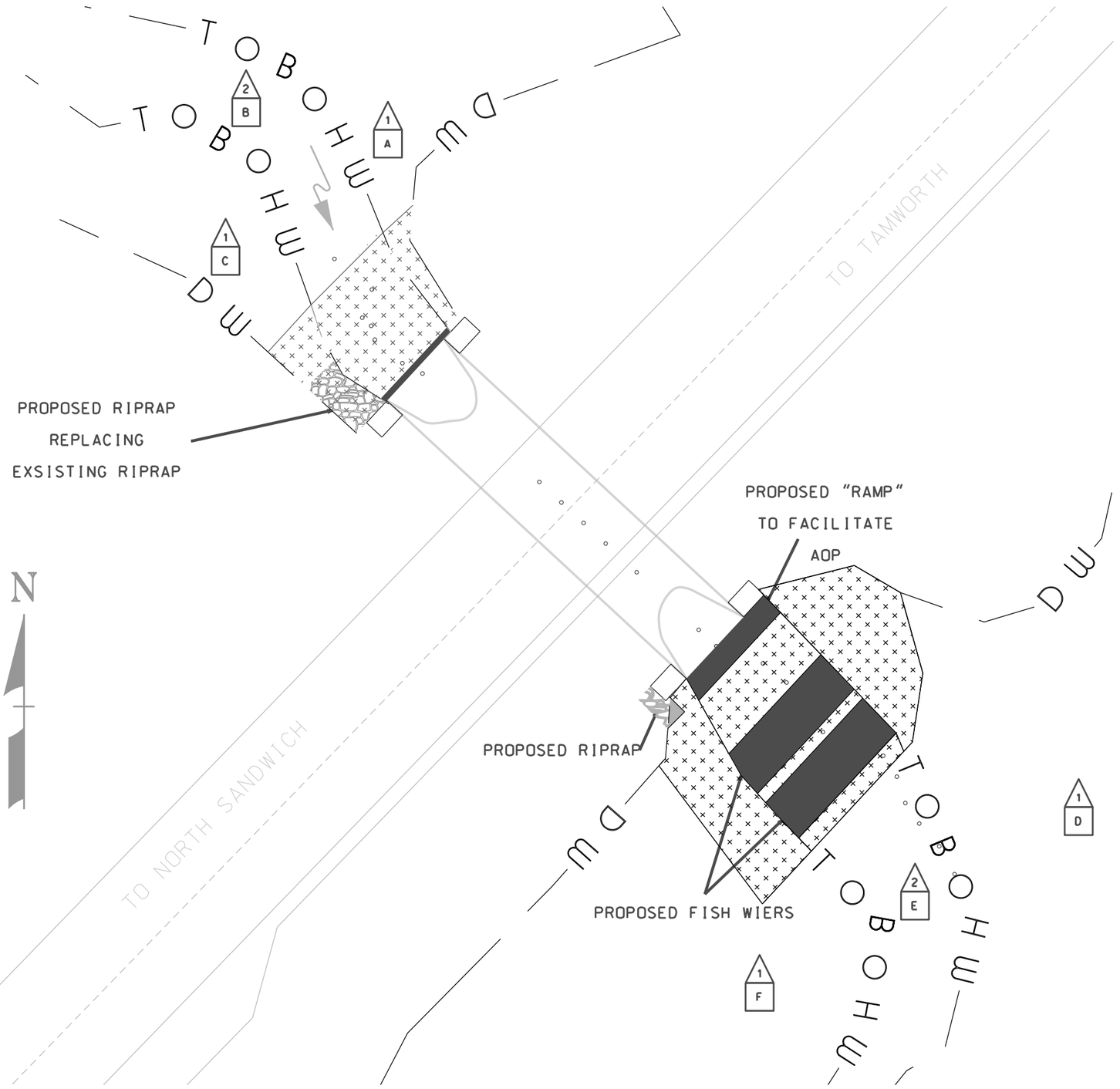
Sandbag cofferdams will be located as show on the plans. We anticipate a maximum height of 3' and maximum width of 4'.

(3) The location and capacity of each sump; and

Potential sumps will be located just inside the work area between the headwalls and the sandbag cofferdams. They will be large enough to accommodate up to a 3" pump per sump discharging to the detention basins.

(4) Backwater prevention method;

Sandbag cofferdams will be located both upstream and downstream of the proposed work to prevent backwater from entering the work area.



WETLAND IMPACTS MAP

SCALE: 1" = 5'-0"

LEGEND

RRIPRAP	
NEW HAMPSHIRE WETLANDS BUREAU (PERMANENT NON-WETLAND)	
NEW HAMPSHIRE WETLANDS BUREAU & ARMY CORP OF ENGINEERS (PERMANENT WETLAND)	
TEMPORARY IMPACTS	

WETLAND DESIGNATION NUMBER

WETLAND IMPACT LOCATION

WETLAND CLASSIFICATION CODES	
PEM/PSS1E	PALUSTRINE, SCRUB-SHRUB, BROAD-LEAVED DECIDUOUS, SEASONALLY FLOOD/SATURATED
R2UB12	RIVERINE, LOWER PERENNIAL, UNCONSOLIDATED BOTTOM, COBBLE GRAVEL AND SAND

EXISTING STREAMBED GRADATION

%SAND	35
%GRAVEL	60
%COBBLE	3
%BOULDER	2

RIPRAP GRADATION

D15	< 16"
D50	< 21"
D100	< 36"

NOTES:
1) NHDOT ROW EXTENDS 50' EACH SIDE OF THE CENTERLINE OF NH 113A.
ALL WORK WILL BE PERFORMED WITHIN THIS ROW or WITH LANDOWNER PERMISSION

2)WETLAND DELINEATION COMPLETED BY MATT URBAN ON 06/24/2021

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE

TOWN SANDWICH BRIDGE NO. 226/162 STATE PROJECT 43487
LOCATION RTE. 113A OVER MILL BROOK

WETLAND IMPACTS MAP

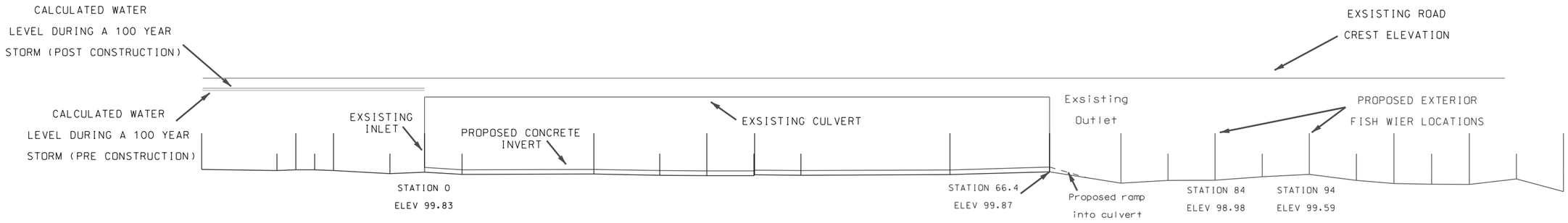
BRIDGE SHEET 1 OF 5

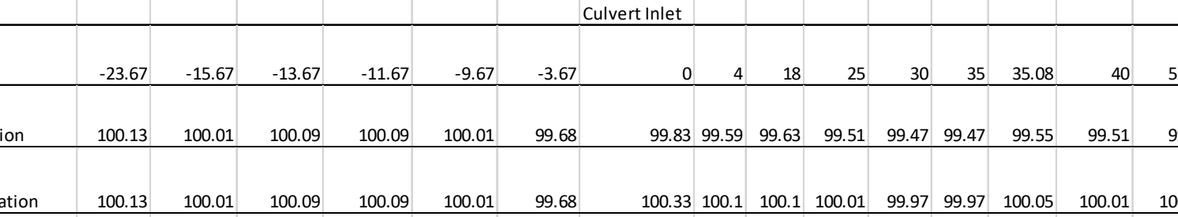
REVISIONS AFTER PROPOSAL	BY	DATE	BY	DATE
DESIGNED				
DRAWN	JPJ	10/1/21		
QUANTITIES	JPJ	10/1/21		
ISSUE DATE				
REV. DATE				

FILE NUMBER SANDWICH 226/162

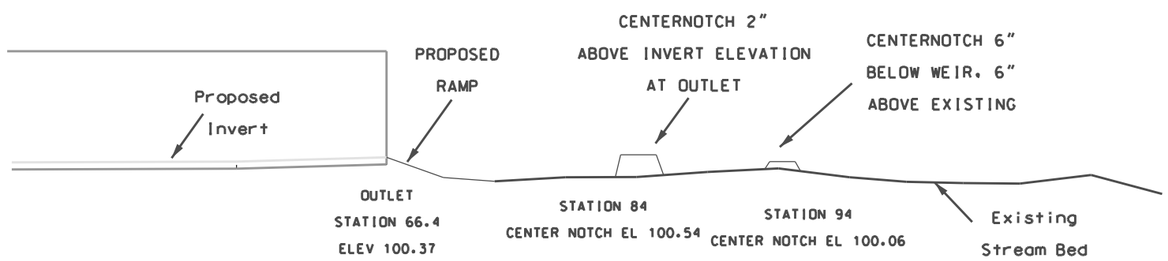
SHEET SCALE	FISCAL YEAR	CREW	SHEET NO.	TOTAL SHEETS
AS NOTED	2021	8	1	5

							Culvert Inlet									Culvert Outlet										
Station (ft)	-23.67	-15.67	-13.67	-11.67	-9.67	-3.67	0	4	18	25	30	35	35.08	40	55.83	66.4	74	79	84	89	94	99	103	107	111	116	121
Existing Elevation	100.13	100.01	100.09	100.09	100.01	99.68	99.83	99.59	99.63	99.51	99.47	99.47	99.55	99.51	99.57	99.87	98.67	98.96	98.98	99.34	99.59	98.96	98.63	98.55	98.52	99.12	97.78
Proposed Elevation	100.13	100.01	100.09	100.09	100.01	99.68	100.33	100.1	100.1	100.01	99.97	99.97	100.05	100.01	100.07	100.37	98.67	98.96	100.54	99.34	100.06	98.96	98.63	98.55	98.52	99.12	97.78
Proposed Change (ft)	0	0	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0	0	1.56	0	0.47	0	0	0	0	0	0

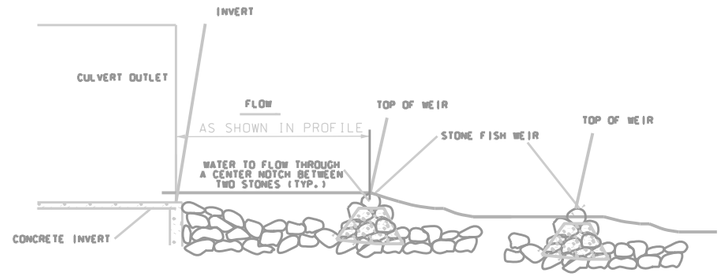




EXISTING OUTLET PROFILE



PROPOSED OUTLET PROFILE



TYPICAL WEIR DETAIL

LONGITUDINAL PROFILE

SCALE: 3/8" = 1'

NOTE: PROPOSED ELVATIONS FOR STATION 84 AND 94 ARE APPROXIMATE AND SUBJECT TO MINOR ADJUSTMENTS. PROPOSED ELEVATION AT STATION 84 WILL BE NO LESS THE ELEVATION OF THE PROPOSED INVERT.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE

TOWN SANDWICH BRIDGE NO. 226/162 STATE PROJECT 43487

LOCATION RTE. 113A OVER MILL BROOK

LONGITUDINAL PROFILE

BRIDGE SHEET OF

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
	DESIGNED				
	DRAWN	JPJ	9/28/21		
	QUANTITIES	JPJ	9/28/21		

FILE NUMBER SANDWICH 226/162

SHEET SCALE	ISSUE DATE	FISCAL YEAR	CREW	SHEET NO.	TOTAL SHEETS
AS NOTED	REV. DATE	2021	8	3	5

SANDWICH 226-162

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION	LOCATION	AREA IMPACTS						LINEAR STREAM IMPACTS FOR MITIGATION		
			PERMANENT				TEMPORARY		PERMANENT		
			N.H.W.B. (NON WETLAND)		N.H.W.B. & A.C.O.E. (WETLAND)				BANK LEFT	BANK RIGHT	CHANNEL
			SF	LF	SF	LF	SF	LF	LF	LF	LF
1	PEM/PSS1E	A					70				
2	R2UB12	B			16	34	337	74			
1	PEM/PSS1E	C					144				
1	PEM/PSS1E	D					391				
2	R2UB12	E			451	20	321	15			
1	PEM/PSS1E	F			7		344				
	TOTAL		0	0	474	54	1607	89	0	0	0

PERMANENT IMPACTS: 474 SF

TEMPORARY IMPACTS: 1607 SF

TOTAL IMPACTS: 2081 SF

WETLAND IMPACTS SUMMARY TABLE

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE

TOWN SANDWICH BRIDGE NO. 226/162 STATE PROJECT 43487

LOCATION RTE. 113A OVER MILL BROOK

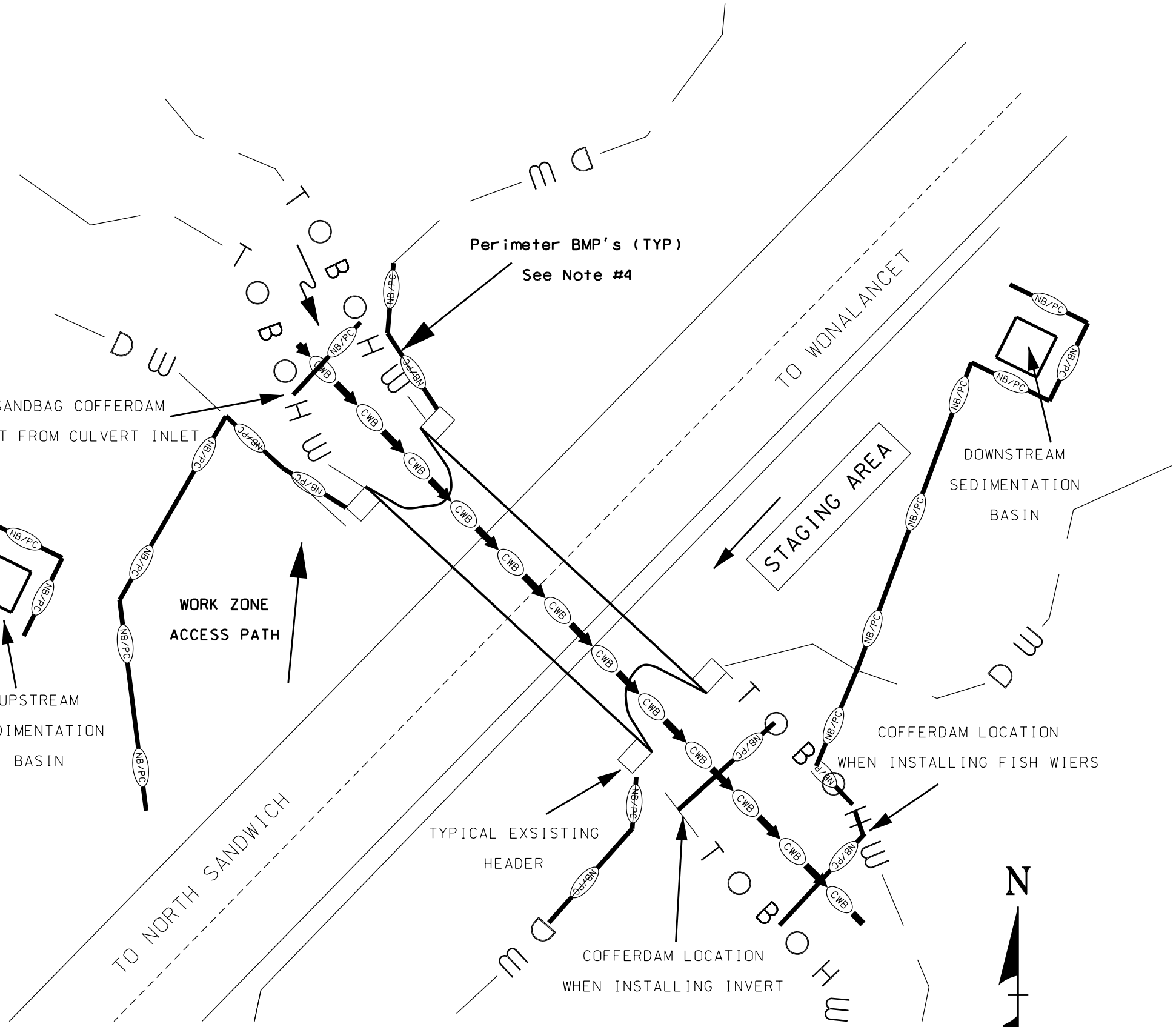
WETLAND IMPACTS SUMMARY TABLE

BRIDGE SHEET 2 OF 5

REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
			DESIGNED		
			DRAWN JPJ	10/1/21	
			QUANTITIES JPJ	10/1/21	
			ISSUE DATE		
			REV. DATE		

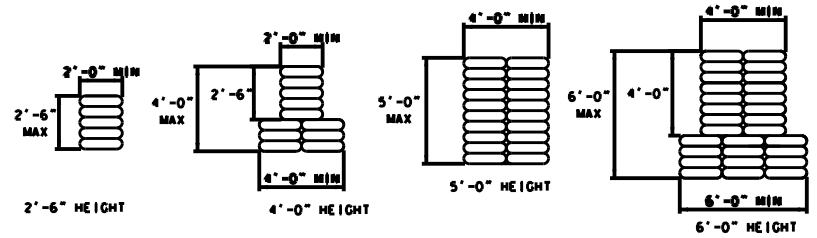
FILE NUMBER SANDWICH 226/162

SHEET SCALE	FISCAL YEAR	CREW	SHEET NO.	TOTAL SHEETS
AS NOTED	2021	8	2	5



EROSION CONTROL PLAN

SCALE: 1" = 5'-0"



COFFERDAM DETAILS

NOT TO SCALE

EROSION CONTROL PLAN LEGEND

- PC — **PERIMETER CONTROL**
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- NB/PC — **NATURAL BUFFER/PERIMETER CONTROL**
  - SILT FENCE
  - EROSION CONTROL MIX BERM
  - EROSION CONTROL MIX SOX
  - TURBIDITY CURTAIN
  - SHEET PILE
  - COFFER DAM
- CP — **CHANNEL PROTECTION**
  - STONE CHECK DAMS
  - STRAW WATTLES
  - CHANNEL MATTING
  - CLASS D EROSION STONE
  - CLASS C STONE
- CWB — **CLEAN WATER BYPASS**
  - PUMP THROUGH PIPE
  - DRAIN THROUGH PIPE OR CHANNEL

NOTES:

1) 30" HDPE PLASTIC PIPE WILL BE USED FOR CWB
2) WORK WILL BE COMPLETED DURING LOW FLOW CONDITIONS
3) ENERGY DISSIPATER WILL BE USED AT CWB OUTLET WHEN WARRANTED BY HIGH WATER VELOCITIES
4) DOUBLE BMPS WILL BE USED FOR PERIMETER CONTROLS
5) SANDBAG COFFERDAMS WILL BE BUILT ACCORDING TO TYPICAL DETAIL

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE

TOWN SANDWICH BRIDGE NO. 226/162 STATE PROJECT 43487

LOCATION RTE. 113A OVER MILL BROOK

EROSION CONTROL PLAN

BRIDGE SHEET 5 OF 5

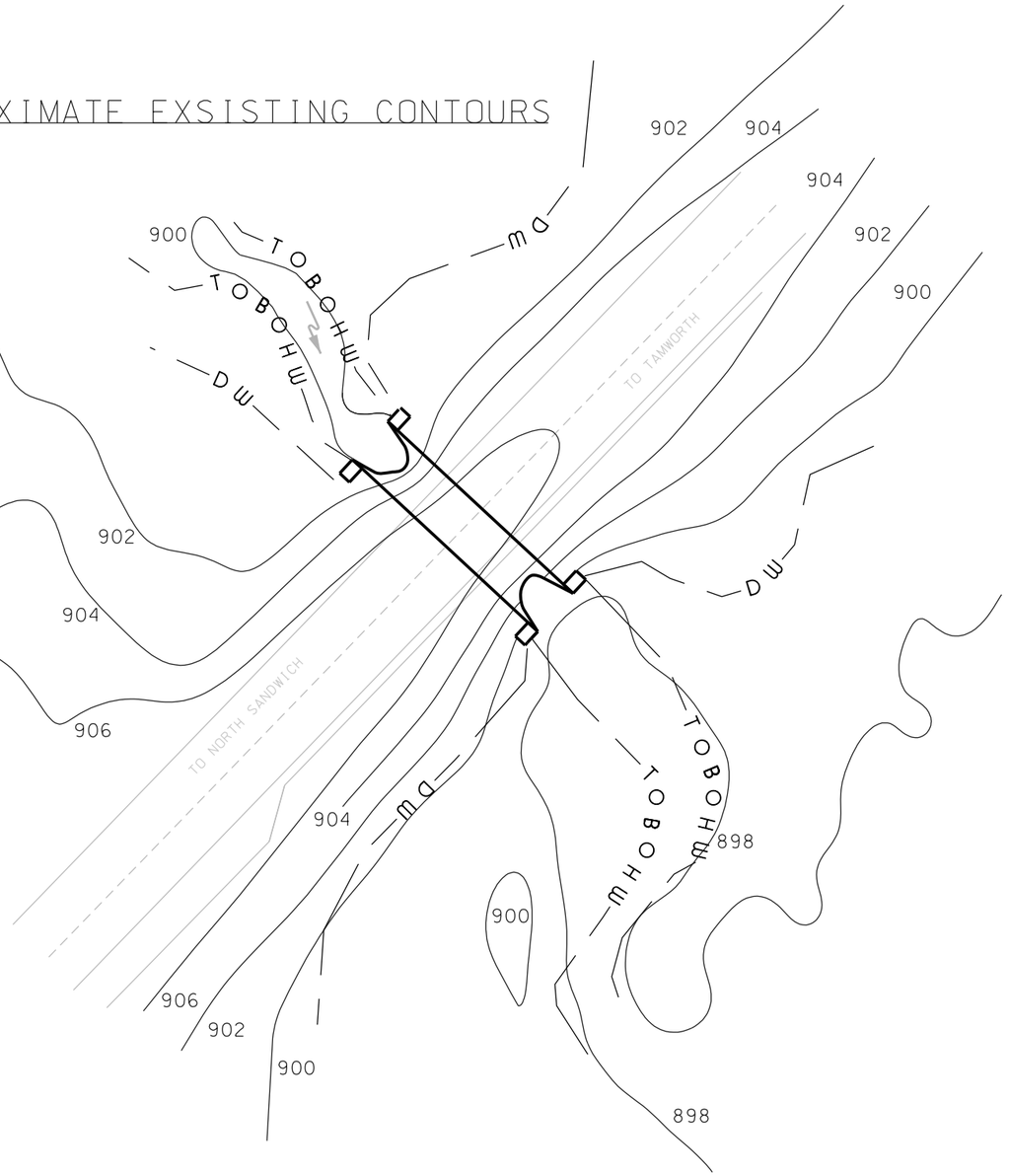
REVISIONS AFTER PROPOSAL	BY	DATE		BY	DATE
DESIGNED					
DRAWN	JPJ	9/28/21			
QUANTITIES	JPJ	9/28/21			

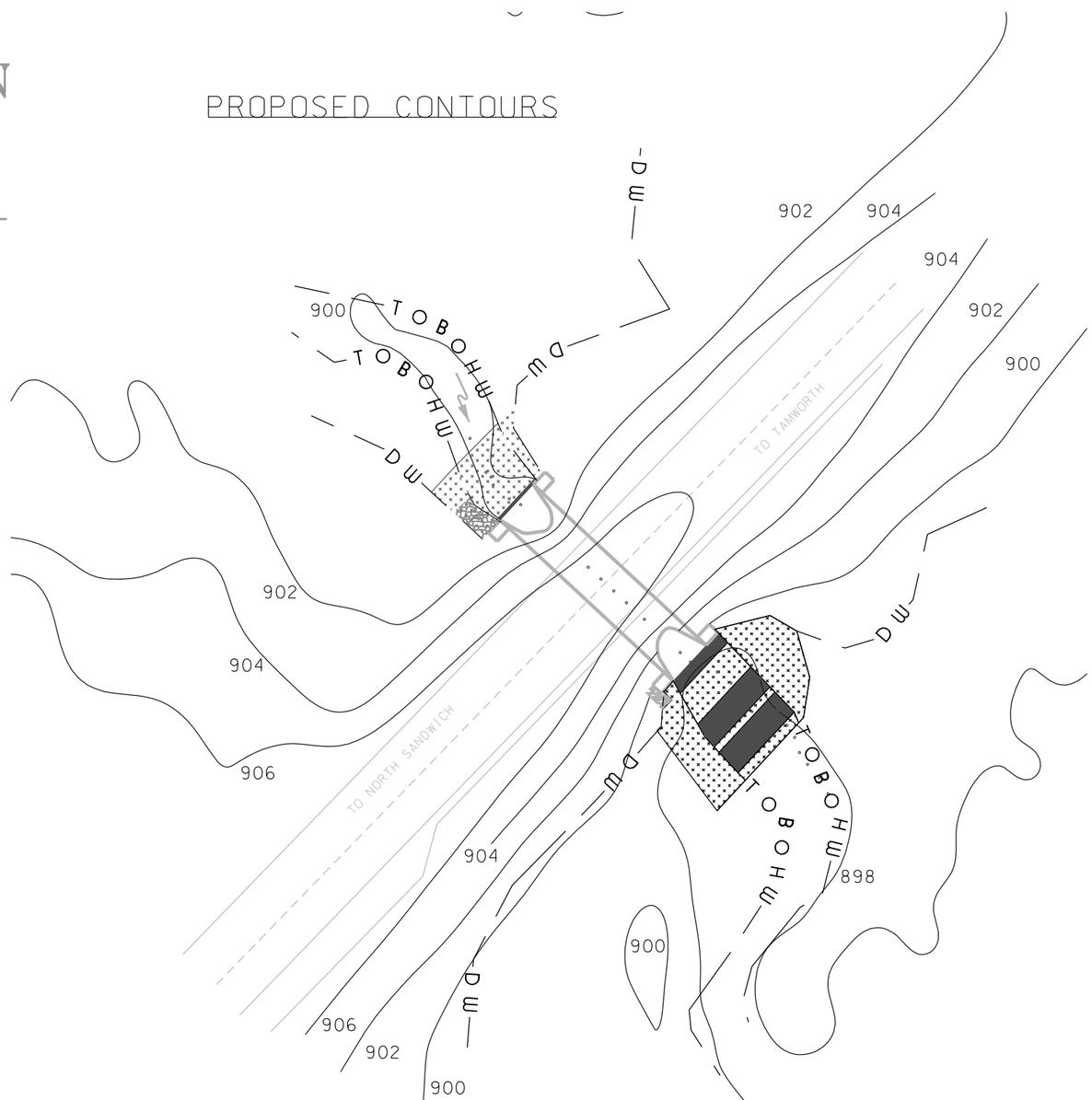
FILE NUMBER SANDWICH 226/162

SHEET SCALE	ISSUE DATE	FISCAL YEAR	CREW	SHEET NO.	TOTAL SHEETS
AS NOTED	REV. DATE	2021	8	5	5

APPROXIMATE EXSISTING CONTOURS

PROPOSED CONTOURS





TWO FOOT CONTOUR MAP

SCALE: 1" = 10'-0"

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION * BUREAU OF BRIDGE MAINTENANCE

TOWN SANDWICH BRIDGE NO. 226/162 STATE PROJECT 43487

LOCATION RTE. 113A OVER MILL BROOK

BEFORE AND AFTER CONSTRUCTION CONTOUR MAP

BRIDGE SHEET 4 OF 5

REVISIONS AFTER PROPOSAL		BY	DATE		BY	DATE
	DESIGNED					
	DRAWN	JPJ	9/28/21			
	QUANTITIES	JPJ	9/28/21			
	ISSUE DATE					
	REV. DATE					

FILE NUMBER SANDWICH 226/162

SHEET SCALE	FISCAL YEAR	CREW	SHEET NO.	TOTAL SHEETS
AS NOTED	2021	8	4	5

National Flood Hazard Layer FIRMette

FEMA

71°22'30"W 43°53'25"N

71°21'52"W 43°52'59"N

0 250 500 1,000 1,500 2,000 Feet 1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

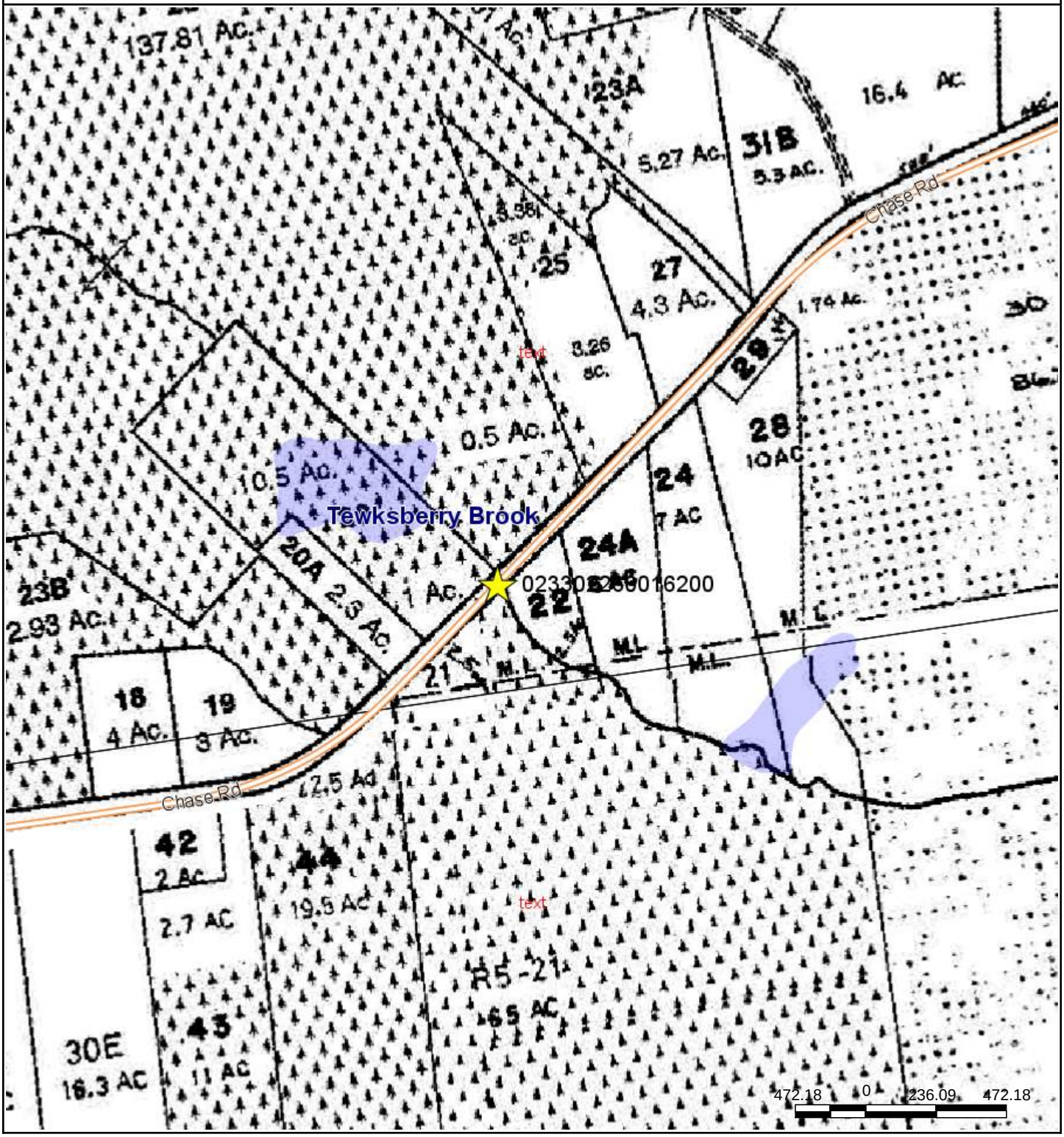
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/11/2021 at 12:54 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF REVENUE ADMINISTRATION

Sandwich, Project #43487

MOSAIC PARCEL MAP SHARING POOL



U.S. Department of Homeland Security
United States Coast Guard

Commander
First Coast Guard District

One South Street
Battery Park Building
New York, NY 10004-1466
Staff Symbol: dpb
Phone: (347) 424-0194
Email: Dale.K.Lewis2@uscg.mil

July 19, 2021

NH Department of Transportation
Attn: Mr. Kerry Ryan
Environmental Manager
7 Hazen Drive
Concord, NH 03302

Via email: Kerry.A.Ryan@dot.nh.gov

Re: NV-1100: NH Route 113A over Mill Brook; NH Route 25/NH Route 118 over Atwell Brook; NH Route 135 over Rix Brook

Dear Mr. Ryan:

This is in response to your letter dated June 23, 2021 and corresponding information requesting whether the Coast Guard will require permits for the referenced bridge projects. We have examined the proposed project areas with regard to their status as navigable waterways of the United States for purpose of Coast Guard bridge jurisdiction.

Our examination indicates that there is no sufficient factual support for concluding that Mill Brook, Sandwich, NH, Atwell Brook, Wentworth, NH, and Rix Brook, Dalton, NH, at the project locations, have current or historic navigation occurring on these waters of the United States. Since this is the case, Coast Guard bridge permits or exemptions will not be required for the referenced bridge projects.

If you have any questions feel free to contact this office at the number above.

Sincerely,

FISHER.DONNA.A.1063032430 Digitally signed by FISHER.DONNA.A.1063032430 Date: 2021.07.19 11:40:34 -04'00'

D. A. Fisher
Bridge Program Manager
U.S. Coast Guard
By direction

E-Copy: 1) USCG Sector Northern New England, Waterways
2) USACE, New England Division, Navigation Section